DOCUMENT RESUME

ED 243 681 SE 044 412

AUTHOR	Stronck, David R., Comp.
TITLE	Discussing Sex in the Classroom: Readings for Teachers.
INSTITUTION	National Science Teachers Association, Washington, D.C.
REPORT NO	ISBN-0-87355-024-2
PUB DATE	82
NOTE	98p.
AVAILABLE FROM	National Science Teachers Association, 1742 Connecticut Ave., NW, Washington, DC 20009 ($8.00).
PUB TYPE	Reference Materials - General (130) -- Guides - Classroom Use - Guides (For Teachers) (052)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Abortions; *Contraception; *Controversial Issues (Course Content); Ethical Instruction; Homosexuality; Position Papers; Reproduction (Biology); Science Curriculum; Science Education; *Science Instruction; Secondary Education; *Secondary School Science; *Sex Education; *Sexuality; Venereal Diseases
IDENTIFIERS	*Bioethics

ABSTRACT

This reader provides teachers with background material on a range of sex-related subjects likely to surface in any classroom at every level, but particulary in middle or high school science classrooms. The first section presents statements of the National Science Teachers Association supporting the right and responsibility of teachers to provide sex education. The second section provides articles which focus on the debate between advocates of sex education and its opponents as well as on the past and future role of sex education in schools. The third section develops the concept that an adequate sex education program can help students to clarify their values and to recognize personally as well as socially acceptable moral and ethical principles. At the same time, this section is designed to present practical examples of both content and technique to assist in the sensitive teaching task that sex education presents. Each article in this section stresses that adequate sex education consists of more than strictly biological information. The fourth section reinforces the need for teaching specific topics which sometimes are eliminated by censorship. Articles in this section focus on such topics as venereal disease, birth control, premarital sex, abortion, and homosexuality. (JN)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

DISCUSSING SEX IN THE CLASSROOM:

READINGS FOR TEACHERS

Compiled by
David R. Stronck
Department of Social and Natural Sciences
University of Victoria
British Columbia, Canada

Copyright © 1982 by the
National Science Teachers Association
1742 Connecticut Avenue, N.W.
Washington, D.C. 20009

NSTA Stock Number
471-14782
ISBN
0-87355-024-2

CONTENTS

ACKNOWLEDGEMENTS

INTRODUCTION

NSTA POSITION STATEMENTS

1 The Teaching of Human Reproduction 1968
1 Instruction in Human Sexuality 1969

OVERVIEW

3 Sex Education in the Curriculum
Ronald D. Simpson 1978
4 Sexual Ignorance Is Not Bliss
William V. Mayer 1978
5 Sex Education in the Curriculum: Opposed
James A. McAuley 1978
6 Sex Education: A Personal Opinion
William L. Smallwood 1978
7 Integrating Sex Education into the K-12 Curriculum
Derek L. Burleson 1978
8 A Response and A Proposal
Norman D. Anderson 1978
9 Reaction and Response
George G. Shackelford 1978
10 Sex Education: Yesterday, Today, and Tomorrow
John Tebbel 1976
13 Adolescents, Sex, and Education
Adele D. Hofmann 1977
19 The New Opposition to Sex Education:
A Powerful Threat to a Democratic Society
Peter Scales 1981

HOW TO TEACH ABOUT SEX

24 The Case for a Moral Sex Education in the Schools
Sol Gordon 1981
28 Can Bioethics Be Taught?
George H. Kieffer 1979
33 Sex and the Biology Teacher
Dolores Elaine Keller 1972
36 Talking Openly About Sex
Peter J. Snyder 1976
38 Answering Questions About Sex
William L. Yarber 1977
40 Sex and Society: Teaching the Connection
Peggy Brick 1981

ISSUES IN SEX EDUCATION

47 Primary or Secondary Prevention of Adolescent Pregnancies?
James F. Jekel, MD 1977
51 Abortion on Request: The Physician's View
Alan F. Guttmacher, MD 1972
55 The Yam and the Pill
Alwynelle S. Ahl 1978
58 The Pill at 20: An Assessment
Howard W. Ory, Allan Rosenfield, Lynn C. Landman 1980
64 Facts About Methods of Contraception
Planned Parenthood Federation of America, Inc. 1981

66 Waging War on V.D.
William L. Yarber 1978

71 Dispelling Myths About Female Potential
Ethel Sloane 1980

78 Dear Anita: Late Night Thoughts of an Irish Catholic Homosexual
Brian McNaught 1981

82 Genetic Screening: Potential
Barton Childs 1976

86 Genetic Screening: Pitfalls
Jonathan King, Jon Beckwith, Larry Miller 1976

ACKNOWLEDGEMENTS

The National Science Teachers Association is deeply indebted to the number of individuals and associations who have permitted us to reprint their work here. Each author and publisher is credited on the page on which their work begins, but we wish to extend a special thanks right at the outset for the cooperation and commitment to "spreading the word" without which this volume could not have evolved.

Among the various authors of articles appearing here, three were particularly helpful in different phases of researching and securing material for inclusion. Sol Gordon, the pioneering Director of the Institute for Family Research and Education, provided resource material on all kinds of sex-related subjects aimed at all ages and levels of inquiry. Peggy Brick, a teacher and consultant familiar with a wide range of literature on sex-related subjects, pinpointed appropriate pieces on specific themes and referred us to them. And Brian McNaught, a certified sex counselor, award-winning writer, and lecturer, graciously waived his usual reprint fee to enable us to share "Dear Anita" with our readers.

Sex-related graphics, as one might imagine, are at once the easiest and most difficult to find—depending on what tone and tack are desired. We are pleased to have been able to use the delightfully and unobscurely symbolic illustrations (identified by "P.E.") generously provided by Perennial Education, Inc., an international audiovisual supplier of films, filmstrips, and video cassettes on a variety of social education themes emphasizing sex education, but also addressing alcoholism, drug addiction, ageism, nutrition education, and others. A catalog of their offerings will be sent on request to them at 477 Roger Williams; P.O. Box 855 Ravinia; Highland Park, IL 60035.

Finally, NSTA would like to commend and thank the committed panel of reviewers who worked with this compilation from its inception over two years ago to bring it to its current, comprehensive state. The core group involved in the project consists of the volume editor, David R. Stronck, from the Department of Social and Natural Sciences at the University of Victoria in British Columbia; Marvin Druger, from the Department of Biology at Syracuse University; and Carolee S. Matsumoto, Science Supervisor of The Public Schools of Brookline, Massachusetts.

Additional assistance and advice were provided along the way by the NSTA Publications Committee chair, Mary Hill Beavis, from Rio Grande High School in Albuquerque; and Doris Sands, from the Department of Health Education at the University of Maryland.

INTRODUCTION

Sex education—that is, teaching and learning about sex—has a history in our schools, and is certain to have a future. Educators from all disciplines have a stake in the future of school sex education, both from a professional standpoint and from the perspective of citizens who must bear the social costs of continued irresolution in this most sensitive and explosive of educational arenas. But science educators in particular will be instrumental in the development of thorough-going school sex education programs.

According to Gallup Poll results, biologically-oriented content is by far the most acceptable of any sex-related information communicated in the schools. In the past, sex education has been disguised as part of the science and health curricula from the junior high level upward. Today, though a few states have mandated separate sex education programs, sex education still exists exclusively within the context of science courses in many school systems—when it exists at all. For tomorrow, all indications are for the inclusion of a wide range of disciplines and approaches in the dissemination of information about sex. Because of their past experience and public credibility, science teachers will be able to assume a leadership role in advocating, organizing, and implementing such an interdisciplinary effort.

This reader provides teachers with background material on a range of sex-related subjects likely to surface in any classroom at every level—but particularly likely in the middle or high school science classroom. The book is organized to address different kinds of questions and concerns from the political to the pedagogical.

The first section presents the position statements of the National Science Teachers Association supporting the right and responsibility of teachers to provide sex education. The second section summarizes the debate between advocates of sex education and its opponents while looking both back on and forward to sex education's role in the schools. The third section develops the concept that an adequate sex education program can help students to clarify their values and to recognize personally as well as socially acceptable moral and ethical principles. At the same time, this section is designed to present practical examples of both content and technique to assist in the sensitive teaching task that sex education presents. Each article in this third section stresses that adequate sex education consists of more than strictly biological information. The fourth section reinforces the need for teaching specific topics which sometimes are eliminated by censorship. Among these topics are the following from a Gallup Poll listing of subjects essential to a successful sex education program: venereal disease, birth control, premarital sex, abortion, and homosexuality.

The need for extensive, specific, timely, accurate, sensitive, and broadly-based sex education is apparent. Only about 25% of all parents provide education about sexuality for their children, and only 10% of public school students receive adequate sex education in school. The balance of uninformed or ill-informed youth are participating in sex along with the informed at the rate of six out of ten high school students who will have had intercourse prior to graduating. It is perhaps not surprising, then, to note that every third pregnancy in the U.S. involves a teenager, and that over half of all out-of-wedlock births in the country occur in the teenaged population. Unwanted pregnancy is not the only result of sexual ignorance; 2.5 million Americans are infected with the nation's number one reported communicable disease—gonorrhea, and 800,000 of these are women who don't even know it. At the same time, half a million Americans are afflicted with untreated syphillis.

The need for sex education as evidenced by such tragic statistics is acknowledged by a solid majority of the American public. The 13th Annual Gallup Poll of the Public's Attitudes Toward the Public Schools in 1981 reported 70% favoring the inclusion of sex education in the high school instructional program, with 22% opposing it and 8% with no opinion. Still, the opposition is both vocal and well-organized, if small. A well-informed and openly-aired exchange of views is essential to insuring that the will of the majority is served.

We hope this book both invites and assists such an exchange, but it is only a beginning. We urge you to read further among the references listed at the ends of articles here as well as to seek updated information on topics within and outside of the scope of this volume.

NSTA POSITION STATEMENTS

For many years the National Science Teachers Association has prepared position statements on most controversial topics of concern to science educators. Each position statement is a carefully worded summation prepared by a committee of experts and approved by the elected leadership of the NSTA, the world's largest organization dedicated to the improvement of science education.

"The Teaching of Human Reproduction" supports the efforts of science teachers to include this topic as "a legitimate component of any teaching program in the life sciences." The statement demands that such instruction be recognized as "essential in the education of every person" and "feasible at every curricular stage and . . . age level." Despite attitudes of some administrators or parents to the contrary, science teachers have both the right and the obligation to provide such instruction.

The NSTA position statement on "Instruction in Human Sexuality" supports the efforts of all teachers to provide adequate sex education. Because sex education "should involve the physical, emotional, mental, and social dimensions of sexuality," many different curricular programs should be involved in presenting the full range of human sexuality to students. The science teacher may serve as a partner in this effort by providing instruction especially on the biology of human reproduction, but also on its relationship to other dimensions of human experience.

NSTA Position Statements

Bearing on Sex Education in the Science Classroom

The Teaching of Human Reproduction

Although few concerns are as fundamental to the affairs of man as human reproduction, the teaching of this subject continues to be discouraged or actually prohibited in many educational systems. Even without explicit restrictions, moreover, many teachers still must contend with an implied possibility of administrative or community censure. The National Science Teachers Association therefore issues the following statement of policy.

1. We are concerned primarily with the biological aspects of human reproduction, which are most often clearly distinct from social or moral issues. Without intending to prescribe or limit, we identify the following topics as being properly part of the biological subject matter of human reproduction.

- genetic and endocrine foundations of sexuality
- anatomy and physiology of male and female reproductive systems
- nature and development of secondary sex characteristics
- puberty, menopause, and other sex-related phenomena of the life cycle
- sperm and egg maturation, including menstrual cycles
- mating, fertilization, and the events of pregnancy
- development of embryo and fetus, including polyembryony
- birth, lactation, and postnatal development
- relation of reproduction to population biology and the ecology of man
- reproductive hygiene and the principal reproductive diseases

2. We regard instruction in the biology of human reproduction to be essential in the education of every person and to represent a legitimate component of any teaching program in the life sciences. We hold that education in this field is feasible at every curricular stage and can therefore begin at the earliest grade or age level.

3. The appropriately qualified teacher is trained to provide instruction in the biology of human reproduction. Therefore he should be free from external restrictions, implied or expressed, that cannot be justified on strictly biological or scientific grounds. We strongly support and encourage all efforts, including particularly those of school boards and school administrators, that aid and facilitate this free exercise of the teacher's educational function. [1968]

Instruction in Human Sexuality

An understanding of human sexuality as a fundamental and natural characteristic of man is essential for appreciation of the forces that affect the attitudes and actions of individuals, families, communities, and nations.

Schools have long been involved in sex education but frequently without consideration of the full range of human sexuality. Schools should correct this omission through appropriate instruction. Such instruction should involve the physical, emotional, mental, and social dimensions of sexuality. It is especially important that education in sexuality be related to the maturation of students, and a sensitive program of this nature must be conducted by teachers qualified to do so by both training and temperament. [1969]

OVERVIEW

There's no doubt about it: sex education—that is, teaching and learning about sex-related subjects—is controversial. Even when one accepts the premise on which these articles were gathered—that sex education represents, in the words of one of the authors, a triumph of reason over bigotry—questions still surface and resurface about which information to present at which time and in what way. So we continue to search for answers, and in the process sometimes generate more questions than we had at the outset of our quest.

Here are represented a range of outlooks on the status of sex education—promoting its growth and decrying its stature; prescribing its future path and surveying its past; celebrating its successes and admonishing against incipient backlashes. Since the methods of controversy are often as diverse as the issues, here will be found statistical analyses (and abuses), subjective narratives, lists, retrospectives, and other forms of persuasion and information.

Though no single approach to the subject emerges as definitive, the underlying attitude governing the selection of views presented is one sensitive and sympathetic to the need for more and better education about sex-related matters, and the difficulty of fulfilling that need given restrictions of many kinds.

Controversies

A Series of Articles on the Sex Education Question

Reprinted with permission from
THE AMERICAN BIOLOGY TEACHER,
Volume 40, Number 5, May 1978.
Courtesy of the
National Association of Biology Teachers, Inc.
11250 Roger Bacon Drive
Reston, Virginia 22090

Sex Education in the Curriculum

Ronald D. Simpson

The enterprises of science and technology permeate our lives more completely than ever before. With this profound influence new attitudes and human values are emerging, many of which are controversial. The science curriculum is an unavoidable and even appropriate place for many of these issues to arise. Life science courses offer a particularly natural forum for debating and testing new ideas. Accompanying these new ideas are a host of societal and professional problems that must be faced firmly and openly by science educators.

Finding ways to deal with topics such as drugs, evolution, and many sex-related issues is a serious problem for most biology and life science teachers. Larger than this question, however, is the issue of academic freedom and professional responsiblity. The United States Constitution guarantees educators freedom to teach and students freedom to learn. With this freedom comes responsibility. Through organizations such as the National Association of Biology Teachers, educators can come to grips with the problems and issues and develop strategies for dealing with them in a professionally responsible manner.

At the 1976 annual meeting of the National Science Teachers Association, we were able to assemble a distinguished panel to discuss the role of sex education in the science curriculum. (The panel was not meant to be exclusively male. Unfortunately, the two women invited to participate were unable to do so, and they sent men in their places.)

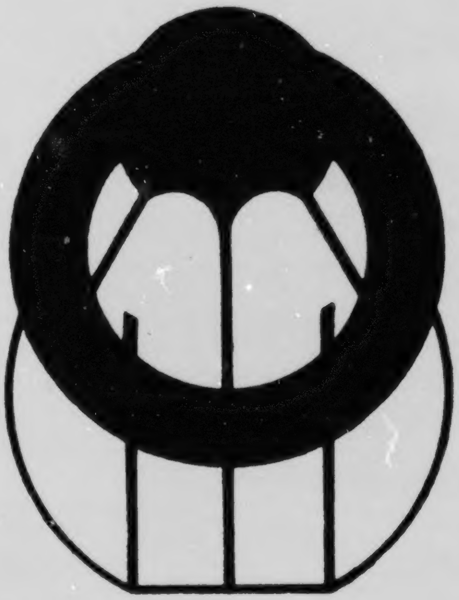
Professional opinions on sex education differ sharply, as do the opinions of laypersons, parents, and school administrators. What are our rights and responsibilities as science educators to deal with this controversial topic? Where does it fit into a life science or biology course? What are some of the positions taken by educators, parents and laypersons on this topic? The purpose of our discussion was to focus on some of these opinions and consider alternative ways of integrating sex education into the science curriculum.

Three members of our panel presented their personal views on sex education; the remaining contributors served as reactors. Our first speaker was William Mayer, director of the Biological Sciences Curriculum Study. He has been particularly concerned over the past years about the efforts of ultraconservative individuals and organizations to impose censorship on many topics in the science curriculum. Our second panelist was James McAuley, vice president for operations of Trans Texas Energy, Inc. Mr. McAuley and his wife, Joan, have been associated with the Teague Committee that investigated NSF involvement in curriculum development, and they have been instrumental in raising many questions regarding federally funded curriculum projects. William Smallwood, author of *Biology*, one of the most widely used high school biology textbooks in the country, was our third speaker.

The first reactor was Derek Burleson, who at the time of the presentation was Director of Educational and Research Services of the Sex Information and Educational Council of the United States (SIECUS). He is currently associated with Phi Delta Kappa, the Professional Education Fraternity, as Editor of Special Publications. Dr. Burleson has considerable experience in the field of sex education. Our second reactor was Dr.

Norman Anderson, Alumni Distinguished Professor of Science Education at North Carolina State University. Dr. Anderson has written several science books, including a junior high school life science textbook. Our third reactor is George G. Shackelford, who did not participate in the panel. Mr. Shackelford served as chairman of the committee that developed the Sex Education Policy Statement for North Carolina public schools, in addition to developing a bibliography in sex education.

The text of their presentations and reactions follows.



P.E.

Sexual Ignorance Is Not Bliss
William V. Mayer

My observations have led me to conclude that current sex education programs for America's young people are inadequate. The following data support this view.

If venereal disease keeps climbing at the present rate in Los Angeles, it is estimated that one in five of the city's high school students will have contracted either gonorrhea or syphilis by the time s/he graduates. As infectious diseases, syphilis and gonorrhea are outranked in incidence only by the common cold. These venereal diseases are now first among reported communicable diseases. The number of VD cases reported annually exceeds the number of reported cases of strep throat, scarlet fever, measles, mumps, and hepatitis combined. In Jacksonville, Florida, in April of 1976 an airplane cruised the beaches towing a banner designed to catch the eye of vacationing college students and increase their awareness of venereal disease and its incidence. The banner read: "Catch a Frisbee; not V.D."

Statistics also indicate that venereal disease is not primarily an adult phenomenon. In Colorado in 1975, persons fifteen through nineteen accounted for nearly 21% of the gonorrhea cases and a little over 5% of the syphilis cases reported. Only 2% of the VD patients treated in St. Louis clinics were prostitutes.

"Prostitution is not where it's at with VD," says Robert M. Nellis, an investigator with the San Francisco City Clinic. "It's Johnny next door or Suzie up the street."

At least one in five persons with gonorrhea is under twenty years old. In 1971, more than 5,000 cases were reported among youngsters between the ages of ten and fourteen and 2,000 cases among children under nine.

A second body of data supporting the view that our present mechanism of provided sex-related information is inadequate is that on childhood pregnancy. Every third pregnancy in the United States involves a teenager. In 1974, 750,000 American teenagers became pregnant, and more than 200,000 teenagers gave birth to out-of-wedlock children. This accounts for more than half of all the illegitimacy in the country, and the numbers are rising. Between 1971 and 1974, there was a 12% increase in illegitimate births to white girls aged fifteen to nineteen and a 5% increase among black teenagers. During this same period, illegitimate births to white girls under fifteen increased by 32%, with a 3% increase for blacks. Without quite a number of "quickie" marriages to turn premarital conceptions into legitimate births, these figures would be even higher.

Officials of the Planned Parenthood Federation of America are confronting a disturbing new problem: how to handle the increasing number of young teenagers seeking birth control information. Girls of nine, ten, and eleven years of age are asking for birth control devices. In 1974, 15,000 girls under the age of sixteen requested help from the 165 Planned Parenthood medical affiliates around the country—a 25% jump over the previous year. The San Francisco/Alameda Office Medical Director, Dr. Gerry Oliva, estimates that 10% of the teenagers seeking advice are fourteen or under, and she is no longer surprised to see twelve-year olds.

Data show ever-increasing sexual activity at earlier and earlier ages, accompanied by abysmal ignorance. These data support the contention that teenagers do not yet seem able to cope with their emerging sexuality. Three out of four unmarried pregnant girls questioned in a 1971 study by Drs. Kanter and Zelnick said they had not wanted to become pregnant, but only 13% of them have been motivated to use contraceptive methods. Most of them did not know what time of the month they were most likely to conceive, and many of them believed that nothing would happen because they were either too young or because they did not have intercourse frequently.

These data on the direct results of sexual ignorance, venereal diseases, and teenage pregnancies are discouraging enough, but a secondary and frequently overlooked series of consequences imposes severe social, humane, and financial burdens on society at large. These consequences affect the teenage mother. For many child-mothers whose parents do not shoulder the major share of responsibility for the new infant, the problems of money, child care, schoolwork, housing, adequate food, medical care, and finding social services, if they are available, are insurmountable. One girl just could not cope any longer, and so she dropped her baby down a two-flight stairwell. Fortunately, he landed on something soft and survived. Teenage mothers frequently treat their babies as they treated their dolls, loving them one minute and chastising them the next. Cases of child abuse, including battered and neglected children, are closely related to the age of the mother. Young mothers are more apt to slap, hit, and shake their babies than are more mature mothers; and according to Douglas Besharov of the Department of Health, Education, and Welfare, they are responsible for the majority of child abuse cases. One million cases of child abuse are reported each year; of this number, 2,000 end in deaths.

A study by Dr. Janet Hardy, professor of pediatrics at Johns Hopkins, provides a bleak picture of what happens if a child of a child survives. She found that of the children who were below grade level, 75% had teenage mothers. Seventy percent of children who started major fires had young mothers. In addition, younger mothers have more premature babies and more fetal and newborn deaths.

The above data indicates a failure on society's part to provide adequate sexual information to young people. The consequences of this failure are documented in the sexually transmitted diseases statistics, the rising numbers of teenage pregnancies, and the increased incidence of child abuse and neglect. Many of the abused children become burdens for our entire society. We can safely assume that no one wants to acquire a sexually transmitted disease and that the majority of teenage pregnancies were not planned. By withholding or providing only superficial information regarding sex, all segments of our society become culpable. Parents frequently fail their children because of their own ignorance or embarrassment, and they leave their children to muddle through their developing sexuality as best they can. Many organizations devoted to sex education find themselves incapable of handling the increasing needs of teenagers and preteenagers. Planned Parenthood's literature and counseling methods, for example, are designed primarily for adults; appropriate material to meet the sexual requirements of younger segments of our society is not readily available. School sex education courses are frequently ineffectual, partially because many teachers are uncomfortable with the subject.

It is painfully obvious that our present system has failed. Recommendations that schools should offer sex education and relevant family education courses beginning in the early grades have been made. We are not doing a good job now, but more discouragingly, we are not making a concerted effort to develop programs that can evolve into more adequate sources of information. Much of the responsiblity for continued sexual ignorance rests with those individuals, however moral and high-minded their motivations, who wish to return to the puritanical mode of ignoring the need for sex education in the hope that this need will go away. Those who oppose sex education must bear considerable responsibility for the unplanned pregnancies, the unwanted children, and the skyrocketing incidence of sexually transmitted diseases. We must not consider ignoring sexuality or deprecating sex education programs; such actions only exacerbate the situation. We should be considering parent, community and school consortiums to attack the failure of our present efforts to deal with emerging teenage sexuality.

P.E.

Sex Education in the Curriculum: Opposed

James A. McAuley

During the discussion of whether sex education belongs in the school curriculum, one of the panel members brought to our attention that illegitimate births and the incidence of venereal disease are currently at an all-time high. Certain panel members have used these statistics to argue that it is imperative that schools expand their instruction in the area of sex education.

I offer the following comments, which I believe reflect the viewpoint of the overwhelming majority of parents throughout this nation.

Sex education in schools should be limited to the biological facts of the reproductive cycle. When teachers attempt to instruct or educate beyond these facts, they find themselves entwined and involved in moral values, both theological and social. Our Constitution guarantees freedom of religion, as well as other freedoms. Sex education beyond the biological facts cannot be discussed without becoming involved in the value-oriented aspect of any sexual act, whether heterosexual, bisexual, homosexual, or masturbatory.

Parents have the responsibility for molding and influencing their child's value system until the child reaches the age of responsibility. They have conventionally done this by selecting their religious preference from a wide range of theological stances—from Fundamental Quaker to the more liberal Unitarian. Many parents and churches have taken rigid stances on the moral ethics regarding sexual conduct. Each of the members of a church has voluntarily selected his/her church, and has not been required by law either to attend church or receive instruction regarding moral values and behavioral patterns.

Some individuals contend that schools are doing nothing more than assuming a responsibility on which the parent has defaulted. I suggest that responsiblity and authority go hand-in-hand and cannot be assumed unilaterally—that is, one cannot assume the authority without being saddled with the responsibility. It appears to me that this is the grave mistake being made by the school systems of this country, and by the federal government in exercising authority in their sponsorship, encouragement, and drafting of sex education literature or curricula.

For the moment, let us accept that nothing is fundamentally wrong with schools and the federal government sponsoring sex education and only judge the question by the effectiveness of these programs. Let us take the instances of gonorrhea, the most common venereal disease, and the illegitimate birth rates. Sex education in the schools commenced around 1960. I should like to refer you to table 1, covering the incidence of gonorrhea from 1941 through 1974, as recorded by the Department of Health, Education, and Welfare. HEW also reported that the incidence of syphilis per 100,000 population in the 15 through 19-year-old age group increased from 10.2 in 1956 to 10.7 in 1973.

Table 1
Incidence of Gonorrhea in the U.S.*

Year	Instances per 100,000 population
1941	146.7
1951	179.8
1956	142.4
1957	129.8
1958	129.3
1959	137.1
1960	139.6
1961	147.8
1962	142.8
1963	145.7
1964	154.5
1965	163.8
1966	173.6
1967	193.0
1968	219.2
1969	245.9
1970	285.2
1971	307.5
1972	349.7
1973	392.2
1974	420.1

*HEW Publication #(CDC) 75-8195, page 9.

Now let us look at the illegitimacy rate for this age group as reported by the Department of Commerce in 1972 (table 2). This same bulletin reports no essential differences in the increase with regard to race.

Table 2
Illegitimacy Rate Among 15-19 Year Olds*

Year	Instances per 100,000 population
1940	40.5
1950	56.0
1960	87.1
1965	123.1
1966	135.8
1967	144.4
1968	158.0

*U.S. Department of Commerce.

A review of these statistics leads one to the obvious conclusion that the effectiveness of sex education is negative. Those who argue that the problem can be solved by sex education must face the brutal facts reflected in these statistics.

In summary, I would like to point out what I see as the two basic concerns of parents, who have both a legal and moral responsibility for their children. Sex education has done nothing to solve sociosexual problems such as venereal disease and illegitimacy; and in fact, since the schools and federal government have entered this field, the incidence of each of these problems has increased at an alarming rate. Of more concern is that once a political body, such as the federal government, can require a school to instruct, influence, or dictate the moral values aspect of sex education, it is only one step removed from dictating all moral values and all acceptable behavioral traits.

This nation became a great nation because of the competitive and independent thought associated with the freedoms granted by our Constitution. I suggest that science teachers should continue to build on that strength rather than overstepping their authority and becoming actively involved where they have no legal or moral responsibility.

Sex Education: A Personal Opinion

William L. Smallwood

My contribution to this general discussion is based solely on my own teaching experience and conversations I have had with teachers and administrators during several years of school visiting throughout the country. To my knowledge, no objective data support the following comments.

In general the three broad categories relating to sex education are as follows:

Category I: Topics that can be included in junior high school life science and high school biology texts and that can be taught without controversy in most communities. I think these are "must" topics for any life science or biology curriculum. They include:

1. The concept of sexual reproduction, its universality, and its advantage over asexual reproduction in promoting diversity and ensuring the population against extinction in a changing environment.
2. Human reproductive biology, including: (a) structure and function of the male and female reproductive systems; (b) the menstrual cycle; (c) hormones that regulate the system; (d) fertilization and early cleavage; (e) implantation; (f) the role of the placenta; (g) stages of embryo and fetal development; (h) general problems of pregnancy; (i) chromosomal sex determination; (j) multiple embryos; (k) the birth process; (l) genetic abnormalities; and (m) intrauterine medicine, such as amniocentesis, Rh incompatibility, and others.
3. Sexual topics relating to growth and development, including: (a) sexual differences in growth curves; (b) puberty and menarche; and (c) secondary sexual characteristics.
4. Venereal diseases.

Category II: Topics that are very controversial but are of high interest to students. These topics usually cannot be included in life science or biology textbooks, but depending upon the philosophy and skill of the teacher and the attitudes of the school administrators and community, they can often be taught with supplemental materials or with the help of resource persons. They include:

1. Methods of contraception;
2. Abortion;
3. Religious attitudes pertaining to contraception and abortion;
4. Sex in relation to marriage;
5. *In vitro* fertilization experiments;
6. Experiments with *in vitro* human development;
7. Experiments with artificial implantation;
8. Sperm banks, fatherless children, and the changing attitudes toward parenthood.

Category III: Topics so emotionally charged that they are considered in the realm of pornography by a substantial segment of the population, and that therefore are unlikely to be tolerated in the large majority of science or biology curricula. These topics include:

1. Role of foreplay in coitus;
2. Erogenous zones and types of manipulation;
3. The role of fantasy;
4. The nature of sexual climax;
5. Oral-anal sex;
6. Group sex;
7. Positions for coitus;
8. The effect of drugs on coitus;
9. Male-female homosexuality;
10. Age in relation to sexual response;
11. Frigidity and impotence;
12. Appropriateness of coitus during early or old age, menstruation, and pregnancy;
13. Sex occupations—surrogates, prostitutes and so on.

Integrating Sex Education into the K-12 Curriculum

Derek L. Burleson

Each of the speakers on the panel has made important points, but all of them give me some problems.

Mayer's case for sex education is eloquent and compelling. The shocking but very real statistics on venereal disease, teenage pregnancy, and the battered child are indicators of social problems that have plagued us for many years and that show little signs of subsiding. Certainly they need our attention. However, I question whether school-based sex education programs are going to solve these difficult problems—as Mayer believes.

In the case of VD, I suggest that, at least initially, a successful education program could lead to an increase in the reported incidence of VD. One of the main objectives of a good VD education program is to convince people to go to a doctor or a public health clinic if they have VD symptoms, and to get them to report their contacts. Once this is accomplished, the individual and his/her contacts become a public health statistic. Public health officers view VD as an epidemiological problem, and statistics are essential for their work. Yet, it is paradoxical to some that VD education programs and media campaigns can lead to increased rather than decreased rates of incidence, at least at the outset.

If you follow my logic, you can see how this happens. Education programs have convinced people that they can be treated quickly and confidentially if they go to their doctor or public health clinic. Once treated, of course, they become a statistic. To me, this is good education.

With teenage pregnancy, we still have the vindictive attitude that the penalty a young woman must pay before she can have access to contraception is one pregnancy or one abortion. Withholding contraceptive information and services has never been and will never be a constraint to adolescent sexual activity. Helping young women take the responsibility for their own sexuality just might. We have yet to test that hypothesis.

My reservations regarding Mayer's defense of sex education in the schools concern motivation and perspective. I am as concerned with those shocking statistics as he is, but I doubt that the "scare tactic" type of motivation will result in the kind of instructional program in human sexuality that we really need. "Scare tactics" are necessary to convince some people, but I have seen some of the crash sex education programs based on such tactics, and the kids will tell you they are one big joke.

The alternative is a sex education program that is carefully planned and integrated in the K-12 health and science curricula with content and teaching methods appropriate to the physical and emotional growth of children and young people. Such developmental programs exist in some school systems, but they are not necessarily labeled sex education. Isn't it time that the central role of human sexuality in the life cycle is treated in a natural and dignified manner devoid of the subterfuges we have used in the past?

McAuley tells us he has been trained as a scientist who deals with facts. He feels that sex education in the schools should be limited to the biological *facts* of human reproduction. He acknowledges, however, that sexuality also touches on many value issues in which the school, as an agent of the government, has no business meddling. He is concerned about indoctrination by the state, and about the violation of parents' rights in the moral education of their children. These are legitimate concerns in a democratic society. However, our schools do not operate in a valueless vacuum. Our schools reinforce the values of parents and the broader community and not infrequently instill a few values that parents have neglected, such as manners or correct speech. McAuley is, I suspect, concerned about sexual values and the conflicting and often controversial views surrounding topics including premarital sex, abortion, and homosexuality.

Dealing with controversial issues is not a new thing in our schools. Teachers, especially in the social studies, have had long experience in handling controversial political topics. Many school districts have written policies on the treatment of controversial issues, the essence of these is that schools and teachers must project a neutral view, but at the same time see that both sides or many points of view are presented when dealing with controversial issues. Many teachers have, in addition, received training in values clarification techniques that are useful in helping one to understand values and value choices.

Today's young people are exposed to sexual issues from every point of view through the mass media. What are they to make of these issues? Where else can they test their ideas, sort out the conflicting opinions, formulate rationales for their own behavior. I submit that the school provides a forum for this kind of process; moreover, the school is negligent if it avoids this important responsibility.

Smallwood has been courageous in trying to delineate what can and what cannot be taught in a sex education course. As a biology teacher, his choice of topics seems appropriate so far as it goes. As a textbook writer, he exercises the conservatism that is required to have a textbook adopted widely. But, as any experienced sex education teacher can tell you, if you run a dialogue-centered classroom, curious young minds are not going to stick to the text, nor are they going to be satisfied with strictly biological approaches to sexuality. Some of Smallwood's "forbidden" topics will surface. They may not be in the formal curriculum, but they are on the minds of young people. I am not advocating that they should be in the curriculum, but I hope that teachers who are conducting sex education classes will be prepared to handle questions on these topics when they arise with accuracy and objectivity.

In conclusion, I hope that it will not be too long before we can start to concentrate on "What Constitutes a Good Sex Education Program?" rather than on "Should the Schools Teach Sex Education?"

A Response and A Proposal

Norman D. Anderson

Mayer has used two examples, increases in venereal disease and increases in teenage pregnancies, to make a strong argument for our schools' providing more effective instruction in the area of sex education. Smallwood, by presenting three categories of topics, has given us some idea of what might be included in sex education under varying sets of conditions. McAuley feels very strongly that sex education should be limited to the biological facts of the reproduction cycle.

There are undoubtedly hundreds of ways one could respond to these three presentations and considerably differing points of view. The central point of the issue, however, seems to center around the teacher. How can the individual science teacher resolve the issue of what to teach? Which of Smallwood's topics are to be included, and which are to be left out?

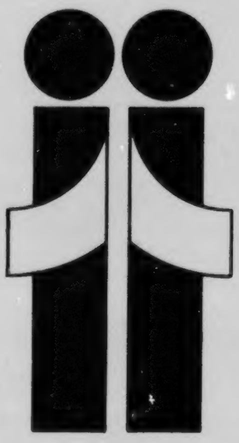
One is tempted to suggest this is a local problem and should be resolved within each community. Although this approach has merit and often has the enthusiastic support of those who wish to restrict sex education to the "basic facts," local control has its limitations. The parents of students in a given science classroom may have views differing as much as those represented by Mayer and McAuley. What is the science teacher to do in that kind of situation?

It also should be pointed out that groups that advocate local control often are busy behind the scenes trying to get state and federal legislation passed that would greatly restrict the scope of sex education.

I have no answer to the difficult questions that have been raised, but one thing is certain: Ways must be found to give classroom teachers some help. Teachers are busy people whose primary responsiblity is to instruct students. They should not be expected to resolve the social, religious, or other issues that divide the adults in so many of our communities.

Perhaps professional organizations such as the National Association of Biology Teachers and the National Science Teachers Association can be a source of help to science teachers. Would up-to-date sets of guidelines help? Would a list of topics like the ones presented by Mr. Smallwood be of help? What else can be done?

The way to find out what help is needed is by asking classroom teachers, and this should be done soon. Otherwise, our science teachers will continue to be caught in the "crossfire" between those who would restrict sex education and those who feel it must receive more attention. Teachers operating in this sea of conflict cannot do their best work; and when this happens, we are all the losers.



P.E.

Reaction and Response

George G. Shackelford

I am grateful for the privilege of responding to these papers, although I was not present at the conference. Because the other reactors were present, maybe my remarks will offer a different viewpoint. I am also a health educator, not a scientist, so this may bring different thoughts and challenges.

Simpson laid the groundwork for the meeting stating that society's problems must be faced openly. As he so aptly states, with the freedom to teach and learn, comes responsibility.

Mayer presented some interesting and vital statistics on venereal diseases, prostitution, child abuse, and teenage pregnancy. This presents a vital challenge indeed, but I feel strongly this should not be the overriding continual objective of the program. Such an approach is negative; ours should be a positive one. I also feel that these incidence rates of sexual promiscuity will be reduced as the result of sound programs in sex education. This should, however, be the by-product of a more positive attitude toward human sexuality for all. Sexuality is a vital component of our lives that needs attention throughout life, from "womb to tomb." Mayer stated, also, that many times information is withheld or is superficial. This is evident, indeed, and approaches the fragmentation or crisis-orientation that we encounter in other health areas. Such programs are perhaps little better than nothing. There are two major recommendations presented in the publication, "Sex Education, A Policy Statement," that was preferred by an interdisciplinary committee for North Carolina Schools. One speaks to community readiness and the other to teacher preparation. Most teachers need some additional training. We are in a position to assist them with this training. I would have to disagree with Mayer's statement that we are not making a concerted effort to initiate proper programs. We feel we are doing this in North Carolina. It seems a slow process, but again we feel definite progress is being made. I agree with him that more concerted efforts involving parents, schools, and community are needed. This can be effectively accomplished when approached with a desire to assist young people in making responsible sexual decisions and providing them with information to formulate habits, attitudes and behaviors needed to reach this goal.

McAuley's statement that he was speaking for the overwhelming majority of parents is not true, according to all the statistics I have seen. Indeed, the moral and religious aspects of sex education are of vital concern, but I do not believe we are talking about usurping the role of parents or religious affiliations. Certain moral beliefs and standards are appropriate for all members of society. We can present these to our young people. We are not talking about "radicals" or those with similar titles doing the instructing. We are speaking of certified teachers that have had additional training in human sexuality. McAuley presented statistics regarding the rates for gonorrhea. He did not point out the rise in total population and more importantly the fact that the case finding rate is much better. I see no way he can justify stating that the effectiveness of sex education is negative in nature. We have no way of knowing how many of these cases even had courses in sex education. Many of them are dropouts from school. I believe very strongly that McAuley is looking only at the negative and social sexual problems. Sex education must be presented in a positive, straightforward manner. McAuley was also concerned with the federal government dictating policies. If we do the job we should do within our homes and schools, this will be no problem. Whether we are members of the NABT, NSTA or some other professional organization aiding curriculum development, we do have a moral responsibility to our young people.

P.E.

Smallwood, through conversation and experience, has categorized topic areas. The topics in categories one and two could be effectively handled in most curricula. As for the items in category three, it would simply have to be decided which could be handled in a school setting and by whom.

We do not advocate separate courses in sex education, but feel they should fit within the existing curricula. Perhaps, they could be integrated into existing courses such as science, health, home economics, and social studies. I have seen very good programs that crossed over subject lines. Sex education should definitely be an integral and vital part of a comprehensive educational program. The science curriculum, of course, plays an essential role in the scope and sequence of course topics and content. Certainly the curriculum should be geared to the level of children's understanding and follow growth and development patterns.

Children want and are entitled to open, honest, and forthright responses to their perplexing questions. School programs should be designed to meet the needs of young people. Information on development in the areas of one's sexuality is a definite human need.

We need to help students cope with sexuality, to learn about sexuality and to become aware of the important role sexuality has in our total life experience. Such help can be given by sincere, well-trained educators dedicated to assisting young people in developing a very vital and integral part of their lives.

Sex Education: Yesterday, Today, and Tomorrow

John Tebbel

Reprinted with permission from
TODAY'S EDUCATION,
Volume 65, Number 1, January-February 1976.
Courtesy of the
National Education Association
1201 16th Street, NW
Washington, DC 20036

Few controversies in American life have endured so long, or been argued so passionately, as the debate over how to teach children about sex—or in fact whether to teach them at all. It is a subject of labyrinthine complexity, involving as it does such broad areas as religious belief, public and private morality, the law, and control of the school curriculum. The arguments, moreover, are suffused with the personal attitudes people bring to the discussion, attitudes firmly rooted in their own psychosexual lives.

Since the absence of specific instruction is a form of sex education in itself, we could say fairly that children in this country have been given it in one form or another since the first colonists formed a society. In those days the physiology of sex had to be learned by experience. The awful terms involved were never mentioned in home or school, but the ruling church authorities saw to it that moral attitudes were taught in both places.

These attitudes were derived directly from Judeo-Christian culture, specifically from the rigid restraints Jews placed on sexual behavior when they returned from their Babylonian exile, an inexplicable departure from the far more permissive laws they followed in their earlier history. Early Christians, most of whom were Jews, inherited these repressive attitudes and perpetuated them in their own religion. When state replaced church as the ruling authority in England, doctrinal repressions were embodied in English law and carried to America with the *Mayflower* and its successors. Several of those laws are still on the statute books in some states.

From the beginning, religion and government were united in their determination to keep within narrowly specified boundaries how and where children were to learn about sex, as well as what and how much. However, that effort has been one of the abysmal failures of history. Before the Revolution, Isaiah Thomas was secretly importing sheets of *Fanny Hill*, binding them, and selling them from under the counter. The licentiousness of the seventeenth and eighteenth centuries in America is abundant proof that the restrictions of state house and pulpit did little to restrict.

It may be supposed that the young were surreptitiously enjoying the tide of erotic literature that began to flow in the early 1800's. The Americana section of the library of the Institute for Sex Research at Indiana University, the largest of its kind in the world, lists 46 of these items published in America between 1800 and 1865. Some of this early erotica masqueraded as guides for the newly married, a belated kind of sex education.

Perhaps the first sex education book for young people, intended as such, was *Important Facts for Young Men,* published in 1844, and announced as showing the "destructive effects of masturbation and the frequency of hernia and rupture." Four years later the moralists were working both sides of the street with *The Secret Habits of the Female Sex,* "letters addressed to a mother on the evils of solitude."

One should not assume that such attitudes were confined to the ignorant, opportunistic doctors who wrote them. Records of early conferences in Vienna, where Freud and his followers were lecturers, show that these pioneers treated masturbation as a sign of immaturity, at the least, and at the most as a sickness needing cure.

If these men changed their attitudes to some degree, most doctors and the general public did not. As late as the 1920's and

1930's, tittering, half-frightened schoolchildren were being subjected to gender-segregated lectures on sex by visiting physicians who repeated the errors of 1844 about masturbation and dispensed a variety of other kinds of misinformation.

In fact, there was little disposition on the part of the scientific community to study either the physiology or psychology of sex. When Alfred Kinsey began the first college marriage course in the nation at Indiana in the summer of 1938 and sought to provide himself with some background information, he learned that only 19 studies of sexual behavior had been made up to that time.

Oddly enough, there was already some movement toward sex education in the public schools. As early as the mid-1920's, the Child Study Association advocated sex education programs in schools, as did the National Congress of Parents and Teachers. The past 30 years have seen a steady movement toward school-related sex education, with growing support from parents, who told Dr. Gallup in 1969, in a ratio of 7 out of 10, that they favored such instruction.

The rising tide of venereal disease and unmarried, pregnant teenagers during the sixties no doubt had much to do with this affirmation as parents, many of whom felt they had lost control of their children, turned to the schools for help.

On the surface, sex education today seems to many like a triumph of reason over bigotry. Even though reliable data are virtually nonexistent, it is common knowledge that such education exists from the junior high level upward even if it does not flourish.

Disguised by such contemporary circumlocutions as "Life Science" classes or "The Family" or well hidden in biology courses, some kind of sex education is being given to children and college students in doses ranging from simple physiology to advanced courses which explain human sexual behavior in the frankest terms. As might be expected, the private schools are well ahead of the public institutions in the degree of information imparted.

Despite all this, sex education remains a matter of controversy, sometimes violent, in many places. The reason is not difficult to find. We are dealing here with attitudes, and in spite of vast sociological change in America, many of these attitudes have not changed since the beginning of the Republic.

We have only to ask ourselves the sources from which children can get information and then evaluate them, to see how confused the situation remains. Now, as always, most children get their sex education "in the street," as the saying goes, meaning from their peers. This is particularly true of those at the bottom of the social and economic curve, but it extends to the top.

At every level, the nature of our contemporary society is such that it is easy for anyone to get sex information in one form or another from books, magazines, motion pictures, even television.

Most sex therapists who have studied the subject agree that this availability has not changed the sexual behavior of children and young adults as much as the public seems to think, but it has made them substantially more accepting and understanding of what people do sexually than any previous generation. The more traditional repressions and ways of viewing sex appear to be confined today to some ethnic groups whose religious and family life is more tightly controlled than is the case with the remainder of the population.

The "family doctor" was once a prime source of sex information, and, according to a recent survey, parents still rank physicians in first place as effective planners of a sex education course. Unfortunately, however, many doctors, in spite of their knowledge of physiology, share the public's misconceptions, misinformation, and prejudices about sex and tend to minimize its importance in their patients' lives. Some are surprisingly provincial about it. A small-town doctor with big-city training told me not long ago that, to his knowledge, he had never actually met a homosexual.

There is, of course, a considerable array of more specialized professionals who are qualified to provide sex education and who do so on a large scale. They would include family-life and sex-education consultants and the whole range of therapists (primarily psychologists) who deal with the sexual problems of both children and adults at many different levels, both in private practice and in schools.

Then there are such valuable organizations as the Sex Information and Education Council of the United States, familiarly known by its acronym SIECUS, which has acquired a worldwide reputation for its approach to sex education. In its first position statement on sex education, issued in 1974, SIECUS defined its approach to such education: "Free access to full and accurate information on all aspects of sexuality is a basic right for everyone, children as well as adults."

Parents who accept this and other SIECUS facts intellectually often revert to *their* parents' fears and phobias when it comes to their own children. A great deal of literature is now available to parents that will help them provide sex education at home, where many of them think it should be taught, but it appears to be used primarily by well-educated, upper-middle-class people.

The total volume of this literature, substantial though it may be by comparison with the past, is still very small. Most parents, it seems, still prefer not to have the problem dealt with at all or want someone else to deal with it.

Parental indifference or outright antipathy, combined with the relatively slow progress of sex education in the schools and the active hostility toward it among large segments of the population, make it highly unlikely that there will be much rapid change in the future. Most sex educators believe that the adults are going to have to be educated before real progress can be made with the children. Goals for sex education need to be defined, since educators are not in agreement, by any means, about what sex education should be or who is qualified to teach it. Certainly, a great many people who are *un*qualified are currently attempting it nonetheless.

More than one sex educator has pointed out that parents themselves must be comfortable and free in their sexual relationships with each other if their children are to be educated properly, but as any therapist will confirm, the social upheaval in America during the past decade has moved family life in the opposite direction.

A prime factor in this move has been the increasing availability of the pill. While the oral contraceptive has not proved to be the decisive factor that advocates of population control had hoped it would be at the beginning, and its medical liabilities remain a matter of controversy, along with the later IUD, its relatively easy availability has certainly affected the sexual behavior of teenagers, and consequently changed many family life patterns.

Up-to-date and comprehensive data are not available concerning the extent of its use by adolescent girls, but as therapists of every variety are well aware, the removal of fear of pregnancy has lowered the barrier that has traditionally prevented girls from having premarital intercourse. Since that fear was based largely on the reaction of parents if pregnancy occurred, the effect has been, inevitably, to change family relationships in many cases.

Perhaps it is more important to attack the problem of parental sex education, many authorities believe, than to waste disproportionate time and effort combating the fanatic moralists who try to remove books from libraries, get teachers fired, and generally attempt to suppress any effort toward sex education in school.

SIECUS has a vision of the future probably shared by most in the field. Its members see the next decade as one in which sexual human rights will come to be acknowledged, with "the co-equal obligation of responsibility," thus releasing human energy "from the yoke of fear, guilt, and ignorance about sex, in order to rechannel these energies to productive purposes by people on behalf of people."

If sex education is to have any real meaning in the lives of Americans, beyond teaching them where babies come from and how to avcid VD, these are the long-range goals which need to be realized.

NEA Resolution 75-11, Sex Education

The National Education Association believes that sex education that provides children and youth with information appropriate to their age is basic to healthy, well-adjusted mental attitudes. It also believes that the public school must assume an increasingly important role in providing this instruction and that teachers must be qualified to teach in this area.

The Association urges that courses in sex education be developed with care and that classroom teachers who teach the courses be legally protected from irresponsible censorship.

The Association urges its affiliates and members to support appropriately established sex education programs, including information on birth control and venereal disease.

Adolescents, Sex, and Education

Adele D. Hofmann

Reprinted with permission from
NEW YORK UNIVERSITY EDUCATION QUARTERLY,
Volume 8, Number 4, Summer 1977.
Copyright by the
New York University
537 East Building
Washington Square
New York, New York 10003

The estimate that 11 million teenagers are sexually active in the United States today (1) seriously challenges us to ask ourselves if non-marital intercourse is invariably detrimental for our young. Too frequently we have cloaked this issue with denial, avoidance, and our own anxieties. We seem to be engaged in a conspiracy of silence, deluding ourselves with the illusion that unless a teenager is pregnant or has venereal disease, sexual intercourse among adolescents simply does not occur. Or we believe that if sexual intimacy is talked about openly, heretofore unthought-of ideas will be put into the heads of adolescents and their instinctive drives actuated.

Nor have we been able to define effectively the relative rights and responsibilities of parents, of educators, and of the youths themselves in relation to sex education. Primarily concerned with conveying intellectual facts and with attempting to mold teenage sexual behavior to relatively conservative adult standards, we have not often taken into account the modifying factors of adolescent development itself in either psychological or historical terms. Failure to respond to these issues results in an inevitable failure to educate the young constructively about sex.

The basic truth is that each generation of adolescents must be assisted to seek and define its own identity, moral code, and behavior if it is to meet effectively the demands of a rapidly changing world. If youths are to accomplish these goals, they cannot be expected simply to incorporate static traditions.

My intent in this paper is to examine various shifts in adolescent coital behavior and to explore corresponding shifts in the nature of parental authority, minors' rights, and sexual morality, relating the latter to its derivations in ancient taboo. For an analysis of these factors inevitably suggests to me that the greater sexual freedom that obtains today is a mark of social advance. At the very least, we are inescapably drawn to the conclusion that many of the unmarried young have determined for themselves that sexual activity is just as valid an alternative as chastity, regardless of adult views. In responding to these observations, I shall propose that an understanding of the foregoing matters, together with knowledge of adolescent psychological development, offers a sound basis upon which to formulate a more satisfactory educational plan.

If we accept that these contemporary changes lead also to the conclusion that a sexual morality for the young cannot be dictated, although it may be implicit in their upbringing, we must accept too that adolescents may be benefited most by encouragement to devise an individual value system derived from the past but flexible enough to meet the future. It is unlikely that they will be helped by present methods of sex education, which provide only part of the truth and little opportunity for students to test out their own views, explore options, make reasoned choices, and behave responsibly out of their own inner motivations.

Indications that sex education has not been effective rest in such facts as these: in 1974 more than 1 million teenagers, aged 15 to 19 years, became pregnant; 600,000 babies were born out of wedlock; 270,000 abortions were performed; and there were 100,000 forced early marriages. Among those under 15 years of age, 30,000 more became pregnant. (2) Only one out of every five states mandates sex education in any form; and only one-third of all high schools teach about birth control. Young people themselves report that the vast preponderance of conveyed information revolves simply around the biological facts of reproduction and puberty, and few believe that their behavior was significantly influenced by what they were taught. (3)

Adolescent Sexual Behavior

The only data we have on sexual activity in the United States in the past came from Kinsey in the 1940s, who found that by the age of 17 years some 10 percent of all females in his study had premarital sex. (4) By the age of 20 this figure was nearly double. Coital experience was not significantly influenced by the girl's final educational level, as was true for boys, but she was far more likely to have had intercourse as a single woman if she ultimately became married than if she did not. This represented a tenfold increase in the proportion of sexually active single teenaged females over the previous thirty years. Indeed, some 40 percent of all married females in Kinsey's time had premarital intercourse, usually during their engagement. For the most part, regardless of age, coitus was with but a single partner for whom the girl cared deeply and with whom she anticipated a permanent alliance.

Nearly three decades later, in 1970, Kantner and Zelnick carried out a national sampling of 4,000 adolescent girls, 15 through 19 years old, and found that 27 percent of those who were white admitted to having had coitus by the age of 17. (5) By the 19th year 46 percent were sexually experienced. This represents more than a doubling of the earlier Kinsey rate. Their behavior, however, can hardly be called promiscuous in the epidemiological sense any more than it was some twenty-five years ago. The majority of girls continued to have relations with a single partner whom they loved and hoped to marry. This trend is further supported by the more limited studies of Luckey and Nass and Christensen and Gregg in interviewing college students, and in the smaller a-la-Kinsey sampling of Hunt. (6)

Admittedly, results obtained from highly personal and intimate questionnaires are inevitably distorted to some degree by answer bias. It is also difficult to compare statistical information obtained in one study with that from another when there is significant disparity in survey designs and populations (e.g., Kinsey's study contained no minority groups).

Turning to males, Kinsey found in the 1940s that 61 percent of adolescent boys had sexual intercourse by the age of 17, and 72 percent by age 20. (7) For the most part young males obtained their experience with prostitutes, unless they were in the year prior to marriage. In more contemporary times, Luckey and Nass and Hunt found that there has been an increase in the already high incidence of coitus among adolescent males, particularly among the college-bound. They are also now much more likely to have relations with their dating partner than with a prostitute. (6) Finkel and Finkel recently surveyed 421 boys between 12 and 17 years of age residing in a large northeastern city in the United States. They found 69 percent admitted to being sexually experienced, and more than three-fourths had their first coital experience before their 16th year. (8)

Additional evidence of change comes from Vener and Stewart who surveyed a high school population of nearly 1,000 males and 1,000 females between 13 and 17 years of age in both 1970 and 1973. These adolescents lived in a white, middle-class, non-metropolitan, midwestern community of 25,000 inhabitants representative of "Middle America." Here, too, there was a definite rise in the incidence of sexual activity among teenagers over even this three-year span. In 1970, 27 percent of male and 16 percent of female students affirmed that they were experienced. In 1973, this rose to 33 percent and 22 percent, respectively, with a particularly pronounced rise among 14- to 16-year-olds and a suggestive trend for both sexes toward coitus more often with multiple partners. (9) This is the first intimation of a possible shift in the essentially monogamous pattern characteristic of teenage females.

Further confirmation comes again from Zelnick and Kantner. Surveying a second national probability sample in 1976, they found that 8 percent more teenage girls were sexually experienced and 10 percent more had multiple partners than in 1971. (10) It can now be estimated that of our nation's 21 million 15- to 19-year-olds, over 4 million girls and 7 million boys are sexually experienced. Even one-fifth of all 13- and 14-year-olds have had sexual intercourse at least once. (11)

We must conclude that young women in the United States are indeed more sexually active at an earlier age than in the past. Young white males seem to be doing just about what they always did, but now with a dating partner rather than with a prostitute. They also tend to be sexually active at an earlier age. We have insufficient information to make similar comparisons relative to minority groups; current data, however, demonstrate that young black females are twice as likely to be sexually active as white females. (5)

If the changing patterns of sexual activity of the past fifty years continue on their present course, we will soon arrive at a time when the preponderance of American teenagers, girls as well as boys, will have engaged in coitus prior to their 20th year. There is little to suggest a different outcome, or that we could reverse this trend. Further, this is not a reaction to any new or recent events—neither the counterculture movement of the sixties, nor the availability of "the pill" and other contraceptive devices—for few girls anticipate initiating coital behavior with any advance pregnancy protection plan, and a significant number fail to use effective birth control methods on any consistent basis. (10) Rather, the change is far more deeply rooted in the past.

Children in America

The first New England colonists, whose views on child rearing had considerable influence on subsequent directions in education, saw the young as firmly possessed of original sin to be atoned for in a lifelong search for salvation. The way was marked by hard work, absolute obedience to parents and masters, diligence in learning, attending church, and the observance of premarital chastity. Life for children was supposed to be strict and disciplinarian. The family was central in these matters, and schools were but secondary. (12)

Colonial economic success and the climate surrounding the Revolution combined to modify these early child-rearing attitudes along more realistic and pragmatic lines. In a new age of volunteerism and self-help youths were expected to achieve righteousness through their own decisions and actions rather than through the vigilance of others. This trend was further reinforced by the influence of neighboring mid-Atlantic and southern colonies which had been founded more on commercial grounds than on religious principle. (13)

P.E.

Despite continued requirements of absolute obedience to parent and master, a new principle emerged: each generation not only could be something more than the last, but it bore this charge as an obligation. Any child could, and indeed should, grow up to be "better" and more successful than his predecessors, a concept that has been labeled the American Dream. This futuristic orientation toward the young led to a much more flexible and open attitude toward child rearing, which in turn allowed adolescents a greater opportunity for personal freedom, experimentation, and the assumption of new roles.

In another direction, the mid-1800s found significant numbers of immigrant children laboring long hours in mills, mines, and factories. A cadre of child advocates arose outside of the home, championing the welfare rights of the young. The last quarter of the nineteenth and the early twentieth century were marked by widespread enactments of a variety of protective laws ensuring that children received what the state held to be proper nurturance and were not subject to harm. (14) The earlier disciplinarian attitude toward children had given way to one of benevolence. The young were to be saved from harmful external influences rather than from their own excesses and improvidence. This protection became just as much the responsibility of the state as it was of the family.

Compulsory education laws gave schools a far greater role in child rearing than was true heretofore. But as far as inculcating moral values was concerned, schools were not in an enviable position. How does one rear children and adolescents to hold onto past values while at the same time selectively and individually rejecting those that impede the finding of a new and better way? The dilemma is succinctly stated by Eli Ginzberg, the economist:

> A society dedicated to change must be willing to assume a critical attitude toward many of its own basic experiences and must further be willing to restrict its own authority in favor of newer, radical ideas. Only to the extent that young people are brought up differently from their parents can a society seriously hope to fashion a world that is better. (15)

From a psychoanalytic perspective, "growing up differently" also poses a significant threat to the autonomy and validity of those adults currently in charge. The maturation of the young inevitably heralds the ultimate retirement and hence, downfall of the old. This dilemma is considerably greater in our society than in one in which there is no rejection of the past and parental views are recapitulated and perpetuated in their offspring. In consequence, American youths frequently encounter unconscious hostility toward that which they represent and a negation of any change in values from the past. Sexual behavior is, in our culture, often at the forefront here, both as an issue in and of itself and as a symbol of all intergenerational change. It becomes an arena for the contest over control between young and adult.

Roots of Premarital Chastity

While not casting a shadow on religious principles *per se*—it is important to recognize that moral values do not emerge in an emotional or social vacuum. They are deliberately, albeit unconsciously, constructed to defend against inner psychological conflict and anxiety or against threats to a culture's social and economic order. While Western civilization has come from a moral base which proscribes sexual freedom among its unmarried young, this is not and never has been a universal requirement in all cultures (as is true of curbs placed on aggressive drives), nor one which is imposed upon both sexes in equal measure.

Reich and Nemecek collectively offer convincing evidence that premarital chastity requirements are not only primarily visited upon girls, but on girls within a patriarchal system. (16) One cannot help but conclude that the asset of female virginity is strongly tied, first, to tribal economics wherein an "unused" daughter brought the better bride price, and wherein children born out of wedlock had no inheritance rights if inheritance moved through the paternal line; and, second, to primitive magical thinking wherein there was inherent danger in menstrual and hymenal blood, just as the blood that flowed from wounds was obviously associated with weakness and sometimes with death. Add in primitive man's animistic beliefs holding that evil spirits lurked everywhere, including body orifices, ready to do harm if not properly propitiated or exorcised. It becomes relatively easy to contemplate how primitive patriarchal societies saw the female as both "safe," as far as evil spirits were concerned, and of economic worth, only if she were kept premaritally virginal and if defloration and menstruation were surrounded by protective rites and rituals.

Support for this magical concept of women as dangerous within patriarchal societies is found in the biblical story of Adam and Eve; in such myths as Perseus and Medusa or Odysseus and Circe; in the prohibition against intercourse during menses and the ritual post-menstrual bathing practices in orthodox Judaism; in the Salem witch trials; and, in more modern times, in the singular absence of empathy often encountered by women who have been raped, because they are perceived as seducers.

Quite a different view obtains in those cultures which are more matriarchal in structure. Margaret Mead's Samoan adolescents and Malinowsky's Trobriand youngsters, for example, enjoyed wide latitude in premarital sexual encounters. Indeed, sexual freedom among teenagers was the norm with the exception of a few selected girls who were, by their birth, destined for marriage within the highest chief circles. (17)

The contrast between matriarchai and patriarchal societies in the degree of permissible sexual behavior among the young has particular application today. The history of the women's liberation movement, both suffragette and contemporary, and the move toward a more sexually egalitarian society have also been accompanied by increasing sexual activity among the female young. Girls are now coming to participate in sexual behaviors which have long been, at least covertly, permitted to males. The real implications of increasing sexual freedom, then, are political and cultural in a gradual shifting away from absolute paternalism. It is not simply testimony to the licentiousness of the young, the breakdown of the family, or the abdication of parental responsibility deriving from the "permissive" environment of the youth movement in the 1960s.

Minors' Rights and the Law

The colonial climate of absolute parental authority and the erosion of this position in the nineteenth and twentieth centuries through the widespread enactment of protective laws have already been noted. In this manner the state and its agents came to be invested with far greater responsibility for the child than heretofore. But the young were still subject to adult determination and did not have rights of their own in a constitutional sense.

A wholly new direction was introduced in 1967 when the United States Supreme Court ruled that minors indeed were entitled to much, but not all, of the Bill of Rights in juvenile court procedures. (18) This trend moved into education in 1969 with *Tinker v. Des Moines Independent School District* establishing a student's right to freedom of speech, and it expanded in subsequent decisions in such matters as the right to due process in suspension hearings and freedom of religion in relation to compulsory education. (19)

This confirmation of minors' rights has also moved firmly into the realm of privacy in health care and into sexual matters in particular. (20) All states now have laws specifically permitting minors to consent to venereal disease treatment on their own. Many also have similar provisions relative to pregnancy and birth control.

Some states have more broadly incorporated a "mature minor doctrine," holding that persons of sufficient maturity or intelligence to understand the nature of the risks and benefits of proposed treatments, regardless of their nature, are entitled to give their own consent. Others approach definitions of emancipation for health-care matters through more specific definitions, employing such criteria as age (anywhere from 14 to 18 years) or life-style status (being married, a parent, in the armed forces, or employed and self-supporting). A few states address this issue in even more general terms, stating that a minor need only be away from home and managing his or her own financial affairs in order to give a valid consent. Considerable statutory diversity exists from one locale to another, and only general trends can be given here.

But the law is more than statutory regulations alone. While it has been widely held that only a parent could contract for a minor's care, and that treatment in the absence of parental consent could constitute assault and battery, courts have not always taken this interpretation. A growing body of case law supports the right of self-consent for minors who are mature enough to understand a treatment's risks and benefits. No decision has yet been uncovered in which damages were awarded against a physician who treated a minor over age 15 for any matter or provided an adolescent of any age with pregnancy-related services.

In 1976, the United States Supreme Court addressed the issue of parental consent requirements for the first time. In the first of two signficant decisions, it firmly supported minors' rights to equal protection by holding that states may not require a minor to have parental consent in order to obtain contraceptive services from those federally subsidized programs whose funding guidelines prohibit discrimination based on age or marital status. (21) In the second, striking down a Missouri law which, in part, required parental consent for a minor's first trimester abortion, the Court said:

> The State may not impose a blanket provision requiring the consent of a parent or person *in loco parentis* as a condition for abortion of an unmarried minor during the first twelve weeks of her pregnancy . . . The State does not have the constitutional authority to give a third party an absolute, and possibly arbitrary, veto over the decision of the physician and his patient to terminate the patient's pregnancy . . . Minors, as well as adults, are protected by the Constitution and possess constitutional rights. (22)

While far from clarifying all matters relative to permissible regulations governing a minor's access to health care, or his rights to privacy, these decisions are indeed significant. They lead to the conclusion that the Court views the parent as but a temporary ombudsman and advocate during that period when the child is incapable of acting rationally and knowledgeably on his own behalf. With growing maturity, the child, now youth, becomes endowed by both law and psychological fact with the capacity to make his own best decisions in a graduating manner. The current trend draws the lines of emancipation and self-determination developmentally rather than by arbitrary age factors. The parent is no longer the absolute owner of the child, and the child is no longer inflexibly subject to the will of parent or state.

This change should pose no threat to those families that provide a milieu of emotional health. They have, in many respects, always provided their young with exactly the type of graduating responsiblity that the law now stipulates. It is also true that a healthy, nurturing relationship between parent and child will always take psychological precedence over outside social and legal force. This new body of law has its greatest impact in ensuring that minors will be seen as individuals in and of themselves under less advantageous circumstances.

Psychological Perspective

The extent of sexual freedom among adolescents in our culture is not the issue in debate. It is, rather, that we take a carefully considered approach derived from understanding, and not one that stems from taboo and unconscious conflict.

In a developmental perspective, contemporary Western adolescence is considerably more expanded in both time and scope than it is in simpler cultures, and we cannot entirely equate one with the other. The extended educational requirements of a technologically demanding economy and the complexities of growing up in an open-ended, future-orientated, pluralistic society make the processes of separation and individuation difficult to negotiate. To give adolescents full license for sexual exploration at all developmental stages can well add burdens they are not yet ready to take on. It is important to key sex education to stages of physical and social maturation.

Erickson has defined two tasks of adolescence: first, emancipation from parental ties; second, the finalization of a separate identity in intellectual, moral, functional, and sexual terms. (23) It is sexual identity that we are particularly concerned with here. Early adolescents are heavily invested in the normalcy of their biological development. At the peak of pubertal growth, young teenagers are singularly preoccupied with the progress of statural and reproductive maturation. They initially seek confirmation of their maleness or femaleness in comparison with members of the same sex and determine their capacity for being accepted and liked among same-sex peers. This period ends when the adolescent achieves a sense of security, worth, and self-esteem among those of his or her own gender.

No less narcissistic than at the early stage, the mid-adolescent moves on to try out these same matters with opposites and dating partners. Once assured of competence in this regard, and possessing a secure and comfortable sense of self, the youth finally becomes capable of entering into a mutually caring, sharing, and responsible relationship with another for the first time. Gone is the narcissistic investment of earlier years. The waiving of all restraints upon physical intimacy can place a heavy extra load on negotiating early developmental steps but will be less so or even not at all toward the end.

Adolescence also provides time for coming to grips with those conflicts that inevitably exist between instinctive drives and that behavior which is deemed acceptable and necessary by a given society for the maintenance of order and continuity. Resolution of the obvious dichotomy between sexual fantasies and activated drives, through masturbation or intercourse on the one hand, or the abstinence dictated by social expectations on the other hand, remains a major issue for young people today. Nor can we ignore the implications of psychoanalytic theory. Oedipal conflicts resurface at adolescence, and separation from parental ties and the capacity to establish a family of one's own require that this, too, be worked through.

New interpersonal relationships can be difficult to establish in an open-ended society, and they have variable import depending on the adolescent's particular state. Early and mid-adolescent relationships normally take place within a narcissistic frame, and sexual intercourse at this time inherently has an exploitative quality bearing a potential for emotional harm to one or both partners. No less is experimentation a normal part of these years, trying on new and different behaviors to see which ones work best in the search for a valid identity. Unable to see clearly the consequences of actions taken on new and uncharted ground, and often but weakly guided by adults who find themselves shackled by an inability to talk openly about sex, teenagers are all too often left to explore and experiment sexually all on their own. They may well miscalculate the consequences out of ignorance.

Implications for Sex Education

How, then, can we mount a constructive approach toward adolescent sexuality? There is no contest with the view that any culture requires a set of moral values within which to operate for its own integrity and continuity. Both parents and outside educational forces have firm obligations to this end. But the American social system incorporates significant possibilities for evolution and change. We must also be open to this fact.

The failure to appreciate adolescent development within a contemporary context, and the singular difficulties posed by attempting to reach a consensus in a pluralistic, changing environment, inevitably result in conveying mixed and confused messages to the young about what they should or should not do. The error is in trying to find a single set of acceptable sex behaviors for all adolescents at all times and then trying to bring this about through external coercion.

We must first ask what are we trying to achieve? Are we seeking simply to avoid adverse consequences, such as preventing teenage pregnancies through the conveyance of contraceptive knowledge? Do we seek to limit our impact on venereal disease to the transmission of data on prevention and treatment alone, without really looking at the underlying cause? Or are our goals to help young people deal more responsibly with their sexuality in broader terms, and what does being "responsible" mean?

Even if returning young people to the practice of nonmarital sexual continence were a desirable goal, the analysis of trends in adolescent sexual behavior belies its feasiblity. We must also question the extent that traditional education can actually modify the sexual practices of the young at all. Irwin has postulated that personal experiences within a developmental context have a far greater impact on modifying adolescent health behavior than externally imposed dictums or facts. (24)

Although adults generally respond to intellectually perceived benefits in health matters, teenagers seem to test, refine, and incorporate new health perceptions, primarily through a sequence of developmental steps and direct life experiences. We as parents and educators have not yet recognized this signal difference in the matter of sex behavior, nor have we provided young people with a forum for open dialogue utilizing this concept as the base.

Sex education classes are all too frequently led by persons who are not trained in adolescent development, or who have themselves not examined their own feelings about sex and those ways in which this is reflected in their teaching. Health educators are not immune to "hang-ups" and ignorance. Nor are parents able to talk easily about intimate issues with emancipated offspring. The young are essentially left to their own devices and the questioning of peers to find their way.

Instead, adolescents need an unbiased, open educational forum wherein they can freely explore their own concepts and come to their own conclusions within the context of that particular morality in which each was individually raised. This looks at such matters as alternatives, consequences, and responsibilities in various possible sex behaviors, from free sexual activity to total continence. Elimination of secrecy, hidden taboo, and uncountered peer pressures, together with the opportunity to understand human sexuality within a comprehensive frame encompassing anthropological, social, developmental, psychoanalytic, and biological principles will provide a proper educational milieu. On the agenda for such forums might be discussions of the meaning of intimacy, contraception, homosexuality, masturbation, programmed male aggressiveness, the double standard in male-female morality, sexual guilt and exploitation, dating and interpersonal relationships or, even, how to say "no."

The next step in this model is the provision of support for, and acceptance of, the youth's own particular best decision. This cannot be accomplished without a sense of mutual trust: trust on the part of the educator that adolescents are far more capable of rational and responsible sex behavior than they are generally credited with; and trust on the part of young people that adult motivations rest in helping them grow up in the best way they can and not in an indoctrination with an arbitrary set of values, or in an intergenerational struggle for control, or simply because espousing a rigid sex morality is the safest and least provocative course. Without mutual trust little can be accomplished, for the young will neither bring their true thoughts to the surface nor heed guidance; impulsivity will continue to reign.

Last, while one might well wish on a developmental basis that young people would decide not to engage in sex until they had at least arrived at the mutually caring stage, or on moral grounds that they would not at all, it is necessary to realize that even those who have intellectually elected abstinence will not necessarily always follow this course. The non-judgmental acceptance of an adolescent's behavior is essential. As already noted, teenagers are by nature experimenting, and this developmental proclivity is further enhanced by our cultural valuation of that which is new. Blame should not be heaped upon those who transgress. Rather the goal is to help them work out feelings, issues, and the path ahead without imposing additional guilt or blocking the resolution of conflict. Probably the most fatal pitfall in working with adolescents is to succumb to a confrontational power struggle between youth and adult. This is akin to waving a red flag at a bull and is a contest no one can win.

At the core of all that has been presented here is the conviction that the young are not the possessions of parents, or of society; they are the possessors of their own selves. Adults are but temporary guardians until the young become sufficiently mature to make their own best decision over the circumstances at hand, even if this is in conflict with the past. It is our obligation to provide a flexible, supportive environment in which this can be accomplished. It is only in this way that youth will be able to meet successfully the challenge of social evolution and change.

Notes

1. *Eleven-Million Teenagers*, New York: Alan Guttmacher Institute, 1976, p. 10.
2. *Eleven-Million Teenagers*, pp. 10-Il.
3. *Eleven-Million Teenagers*, pp. 34-36; L. Ambrose, "Sex Education in the Public Schools," *Family Planning/Population Reporter* 5 (1976): 78-80.
4. A. C. Kinsey et al., *Sexual Behavior in the Human Female*, Philadelphia: Saunders, 1953.
5. J. F.Kantner and M. Zelnick, "Sexual Experience of Young Unmarried Women in the United States," *Family Planning Perspectives* 4 (October 1972): 9.
6. E. B. Luckey and G. D. Nass, "A Comparison of Sexual Attitudes and Behavior of an International Sample," *Marriage and the Family* 31 (1969): 364; H. T. Christensen and C. F. Gregg, "Changing Sex Norms in America and Scandinavia," *Marriage and the Family* 32 (1970): 616; M. Hunt, *Sexual Behavior in the 1970's*, Chicago: Playboy, 1974.
7. A. C. Kinsey, W. B. Pomeroy, and C. E. Martin, *Sexual Behavior in the Human Male*, Philadelphia: Saunders, 1948.
8. M. L. Finkel and D. J. Finkel, "Sexual and Contraceptive Knowledge, Attitudes and Behavior of Male Adolescents," *Family Planning Perspectives* 7 (1975): 256.
9. A.M. Vener and C. S. Stewart, "Adolescent Sexual Behavior in Middle America Revisited: 1970-1973," *Marriage and the Family* 36 (1974): 728.
10. M. Zelnick and J. F. Kantner, "Sexual and Contraceptive Experience of Young Unmarried Women in the United States, 1976 and 1971," *Family Planning Perspectives* 9 (1977): 55.
11. F. Shah, M. Zelnick, and J. F. Kantner, "Unprotected Intercourse among Unwed Teenagers," *Family Planning Perspectives* 7 (1975): 39.
12. R. H. Bremner, ed., *Children and Youth in America: A Documentary History*, Vol. 1, Cambridge: Harvard University Press, 1970, pp. 16-48.
13. Bremner, *Children and Youth in America*, pp. 23-26, 131-144.
14. L. Manning, "Child Labor Legislation in 1940," *The Child* 5 (1940): 149.
15. E. Ginzberg, *The Optimistic Tradition and American Youth*, New York: Columbia University Press, 1962, p. 22.
16. W. Reich, *The Invasion of Compulsory Sex-Morality*, New York: Farrar, Straus & Giroux, 1971 (first pub. 1931); D. Nemecek, *Virginity: Prenuptial Rites and Rituals*, New York: Philosophical Library, 1958.
17. M. Mead, *Coming of Age in Samoa*, New York: Dell, 1968 (first pub. 1928); R. Malinowsky, as cited in W. Reich, *The Invasion of Compulsory Sex-Morality*.
18. *In re* Gault 387 U.S. 1 (1967).
19. Tinker v. Des Moines Independent School District, 393 U.S. 503 (1969); Goss V. Lopez, *U.S. Law Week* 43 (1975): 4181; Wisconsin v. Yoder, 406 U.S. 205, 241 (1972).
20. A. D. Hofmann, "Consent and Confidentiality: Their Legal and Ethical Implications for Adolescent Medicine," in R. Gallagher, F. Heald, and D. Garell, eds., *Medical Care of the Adolescent*, 3rd ed., New York: Appleton, Century, Crofts, 1976.
21. Jones et al. v. T. H. et al., *U.S. Law Week* 44 (1976): 3669.
22. Planned Parenthood of Central Missouri v. Danforth, *U.S. Law Week* 44 (1976): 5197.
23. E. Erickson, *Childhood and Society*, 2nd ed., New York: Norton, 1963.
24. C. E. Irwin, "Toward a New Health Behavior Model for Adolescence," Paper presented at the International Forum on Adolescence, Jerusalem, 1976.

The New Opposition to Sex Education: A Powerful Threat To a Democratic Society

Peter Scales

Reprinted with permission from
THE JOURNAL OF SCHOOL HEALTH,
Volume 51, Number 4, April 1981.
Copyright by the
American School Health Association
Kent, Ohio 44240

Introduction

While a great majority of parents support sex education in the schools (Scales, 1981), a vocal and sometimes extreme minority often succeeds in blocking or weakening sex education programs. Although some of their concerns are legitimate, other concerns are the more extreme positions of highly organized political groups. Individuals and community groups involved in planning programs need to be aware of these groups and their interconnections in order to separate legitimate concerns from extremist issues and tactics.

Some of the names are familiar: the John Birch Society, MOTOREDE, Parents Who Care, Parents Opposed to Sex Education, the Christian Crusade, Let Freedom Ring (the telephone network), the American Education Lobby. The groups often mentioned in the late 1960s as leaders of the fight against sex education are active in 1981 in many areas of the country. But that small group has mushroomed in number, and the early connections between religious groups and political organizations have been greatly strengthened. Today, the National Education Association counts over 300 organizations and at least 1500 other apparently unaffiliated individuals who have been visible opponents of sex education.[1] The Citizen's Committee of California, Parents of Minnesota, the Christian Defense League (Louisiana), Guardians of Education for Maine, Coalition for Family Oriented Health Education (New Mexico), United Families of . . . (several areas, including Utah, Maryland and California), FLAG (Family, Life, America, God, located in Arkansas), Concerned Christian Mothers (based in Florida), Young Parents Alert (based in Minnesota) and many others concerned with "parents rights" and "moral education" are just some of the groups working today to block or eliminate sex education. Though their specific interests may vary, most of these groups hold the following fundamental attitudes in common: 1) jingoistic patriotism that insists America can do no wrong; 2) "muscular Christianity;" 3) paranoia over imagined conspiracies intent on radically changing society; and 4) an extreme fear of sexuality and information about sexuality.[2]

These groups pose a threat, not only to the schools, but also to our basic democratic traditions. To adequately meet the challenge posed by these groups, and also to understand more fully why a long-term commitment on active defense of our freedoms is necessary, we must appreciate both the nature of this opposition and also what they are saying.

Censorship as Salvation

Like the movement of the late 1960s, which depended almost solely on the Birch Society-Christian Crusade alliance for its energy, today's opponents of sex education frequently represent an alliance of political lobbying groups and religious elements. As in the 1960s, much of this opposition fervor is based on an impassioned crusade to save children, "the" family and the nation by attacking ideas at variance with a traditional Judeo-Christian belief system, and especially by trying to prevent children's access to those ideas and information. A weapon that grew out of the 1960s used frequently today is censorship of school textbooks and curricula. In order to "protect America's children," all manner of materials have been banned in classrooms across the country. Sex education courses and materials dealing with sex are the most likely to be attacked, but other likely candidates for censorship include materials that "defame" historical personalities or question the wisdom of American leaders, values clarification, realistic dialogue, "questionable" authors, the literature of homosexuals, "trash" (including *Catcher in the Rye* and "most contemporary books for adolescents"), materials that contain negative statements about parents, "invasions of privacy," and a host of other categories.[3] The National Council of Teachers of English estimates that censorship in the public schools has increased 50% between 1965 and 1977, with at least one in three schools now censoring classroom materials and student newspapers.[4] Unfortunately, teachers in school districts experiencing censorship become fearful of violating policy and thus become self-censors as well. In Fairfax, Virginia, for example, teachers felt that they couldn't answer students' questions such as "what is a diaphragm," "how do you tell a boy no," and even "do you think frenching is gross" without risking their jobs;[5] and school nurses in one recent study were reluctant to help students with sexual information and referrals unless sex education was *mandated.*[6]

Not all the opponents to sex education are extremists and religious crusaders. Some people raise reasonable questions about how well teachers are trained, the best age at which certain subjects should be covered, how parents should be involved in designing programs and how sensitive questions might be handled. It is the crusader, however, who is most likely to make his or her impact known. Sometimes they use the legitimate avenues of exerting influence such as speaking at school board meetings, mounting intensive letter-writing campaigns, lobbying politicians and voting. Common unsavory tactics, however, include quoting proponents out-of-context, spreading outright lies and fabrications, disrupting meetings and calling for demonstrations against "controversial" speakers that sometimes succeed in getting them cancelled.

Following are excerpts taken from written material of opponent organizations. They provide examples of how distortion and lies are used to make inflammatory statements. The Council on National Righteousness—a group that decries evolution, values clarification, the "plan" for one-world government, witchcraft, "open-ended" questions and "dirt, sex and drugs" in school books—falsely stated in one of its pamphlets that Sol Gordon's book *Facts About Sex for Today's Youth* contains "descriptive pictures of children making love in various postions" and "tells how a girl will feel her genital is too small for her father's penis."[7] The following comments were hand written on Xeroxed newspaper articles distributed by Louisiana's Christian Defense League: "Incest is the latest thing in sex education. It is even hotter than queer studies—sex educators are SICK!" Before a sex education program even begins, these opponents often charge that "pornography is being made compulsory from kindergarten on." "SCHOOLS BAN THE BIBLE AND MINISTERS, SUBSTITUTING PORNO BOOKS, MOVIES, HOMOS AND VIOLENCE" appeared as a headline in the Council on National Righteousness pamphlet mentioned earlier.

Another frequent tactic of the opposition is the free use of undocumented scare stories about students, usually in a "nearby state," "practicing their sex education by raping their sisters or their teacher." Melvin Anchell, an author frequently quoted with approval in opponent circles, wrote, "Cases have been documented where young boys were compelled to rape younger sisters after schoolroom sexual orientation." No citation followed this statement.[8] In a collection of anti-SIECUS material assembled for the Christian Crusade, this statement was made: "I have not told anyone in this manuscript where materials can be obtained supporting the facts contained . . . but the reader can rest assured that everything has been documented."[9] As absurd as these statements sound, they represent actual material taken from the referenced publications.

Proponents of sex education need to listen to those with reasonable concerns in order to improve education and design programs that will adequately represent the variety of views in a community. Proponents should recognize that the most vocal opponents tend to be unamenable to compromise or to rational exchanges and that, although sex education is the primary target of their efforts, they often use it only as a vehicle to achieve their larger goals of political influence.

The danger posed by these groups is that our precious freedoms are under attack, but many Americans don't seem to appreciate the significance of the attacks. The trend toward censorship has created a climate that may be influencing our children as well. A study of Who's Who American high school students, the top few percent in the country, revealed a couple of years ago that two-thirds *favor* censorship, about the same proportion that opposed it ten years earlier.[10] Our First Amendment freedoms, the freedom of speech and the freedom of and from religion, are under siege; but Gallup reported in 1980 that 75% of adult Americans don't even know what the First Amendment is![11] How can they be alarmed at the threat being posed to it today by the new Right militants in their guise as patriots and protectors of the family?

MORAL
MAJORITY

The New Alliance: Media-Wise Conservatives and Religious Groups

While today's anti-sex education groups share much in common with their predecessors, several factors make today's situation unlike that of the late 1960s and, in fact, considerably more dangerous. First, the sophistication of today's "new Right" in mobilizing "grass roots" support is undeniable. According to the June 1979 *Conservative Digest* (published by Richard A. Viguerie, the right's reigning authority on direct-mail campaigns), the 300,000 member Conservative Caucus can deluge Congress with 25,000 letters on any emotional issue within 72 hours.[12] A recent *New York Times* article noted that voter registration, as it had been for the civil rights activists of recent decades, has been high on the agenda for these groups. The Moral Majority, for example, has started political action committees in every state and says that, in less than one and one-half years of existence, it has registered three million new voters for the fundamental cause.[13] Second, the new Right plays political hardball as well. Where the John Birch Society attempted in the 1960s to "smear" everyone from SIECUS officials to office-holders or candidates with the label "communist," today's right-wing groups are not content with either name-calling or with the traditional blend of Republicanism and temporary liberal-conservative coalition building to achieve victory. Again in the words of the June 1979 *Conservative Digest*, the "new Right philosophy is the exact opposite: Fight, and if you lose, at least make the opposition pay." Third, and most important, today's alliance of right-wing political elements with religious groups benefits from the astonishing change in the last decade in the ability of these religious groups to spread their gospel and their fund-raising through the media. The "electronic church," as it is often called, based primarily on two broadcasting networks, is currently comprised of 35 television stations and over 1,000 radio stations and is growing rapidly. Between the "PTL Club" (People That Love) and the Christian Broadcasting Network, their audience is estimated at over 40 million.[14] Between them, the dozen leading ministries are currently raising more than $600 million a year. These networks provide the airtime for groups such as the Christian Voice, a lobby that campaigns against homosexuals, sex education and, most important, against Internal Revenue Service monitoring of parochial schools. The Christian Voice already has more than 100,000 members, a million dollar annual budget and "nearly a dozen supporters in Congress."[15] The importance of this media access is illustrated by a recent fund-raising letter sent by Anita Bryant on behalf of her group, Protect America's Children:

> There is a current trend of new sex education breaking out across the nation and your children are the ones who will suffer . . . only . . . action by the God-fearing citizens of America can change the tide that is stripping our families and our nation of all decency and morality. . . . Truly this is the work of Satan. . . . Stop the government . . . from polluting our children's minds with sexual perversions and . . . *keep our Christian leaders on the air* . . . so America can hear the truth and set our people free. (emphasis added)[16]

Perhaps the most stunning example of the electronic church's success in preying upon these fears is Rev. Jerry Falwell, founder and leader of the Moral Majority, an organization whose goal for 1980 was to enlist 100,000 fundamentalist pastors and four million lay members. Falwell's radio and television show, "The Old Time Gospel Hour" reaches millions each week coast to coast (on at least 325 TV stations) with its message to "bring immoral public education to its knees."[17] Falwell has taken out ads in *TV Guide* and *Family Weekly*, a tabloid with circulation in the millions, and holds workshops for his followers on how to obtain political power. In many areas of the country, the Moral Majority has fielded its own candidates for local elections.

Beside attacking sex education, "secular humanism," "pornography" in school textbooks, homosexuality and the general "deterioration of the home and family," the Moral Majority spends a considerable effort on getting prayer back into the public schools. It also concentrates on both the establishment of "at least 1,000 Christian schools a year" and, like the Christian Voice, support for legislation that removes state and federal regulation over private schools.[18] Falwell lends his support to those active in censoring and "selecting" school textbooks as well. At the Washington, D.C. launching of his "Clean Up America" campaign in April 1979, he warned his 15,000 listeners that "in school textbooks, pornography, obscenity, vulgarity and profanity are destroying our children's moral values in the guise of 'value clarification' and 'sex education'. Our children are being trained to deny their 200-year old heritage." Finally, he exhorted his audience to "rise up in arms to throw out every textbook."[19]

Another key link in the country-wide right-wing network is the American Legislative Exchange Council. Each year, ALEC distributes a series of model pieces of legislation as a "source book" for every state legislator in the country, all Governors and members of Congress and thousands of media representatives. Its 1977 source book proposed a model "parents' rights" act that would counter "humanistic" and "values-oriented" education. Its 1980 source book recommends a "textbook content standards act" that would require materials adopted to "teach high moral standards including . . . respect for parents and those properly in authority; the importance of the work ethic . . . and the existence of absolute values of right and wrong."[20] The book also contains a sample resolution in support of voluntary school prayer. The general thrust of ALEC is further underscored by noting that its immediate past chair is Rep. Woody Jenkins, the Louisiana House member who has been the legislative leader of anti-sex education movements in that state for the past decade. The influence of this group is best illustrated by the introduction in the 95th Congress of the Family Protection Act, an act largely detailed in ALEC's 1977 source book, and whose separate provisions embody the "right wing's domestic agenda for the 1980s." The act is not likely to pass in its entirety, but its various provisions are considered certain as proposed amendments or riders to various appropriations bills.

IMMORAL
MINORITY

The American Family Forum

In July 1980, the most important gathering of most of these groups, the American Family Forum, was held in Washington, D.C. Followed by a fourth day seminar on "effective political activity," the several hundred conference attendees were addressed by many leaders of the new Right religious-political alliance. According to the National School Public Relations Association, "Sex education was obviously a major target" during the conference. NSPRA charged that one display, for example, was showing a copy of *The Joys of Lesbian Sex*, calling it an example of a "teacher's guide being used in the schools."[21] Presentations included "The church: an alternative to HEW," led by a member of the board of directors of the Maryland Moral Majority and "Improving children's textbooks," by the Gablers of Longview, Texas. The Gablers founded Educational Research Analysts, whose workshops on how to attack curriculum materials are so successful that a member of the Minnesota Education Association notes school censorship cases have "proliferated" in that state after several hundred people attended one of their 1979 sessions. Their efforts are centered in Texas, however; and since a book that is unapproved in Texas will not sell elsewhere, their influence on textbook selection is enormous.

Finally, the conference ended with addresses by several of the "heavies" of the movement: Phyllis Schlafly, leader of the anti-ERA forces, founder of Eagle Forum ("the national pro-family . . . alternative to women's lib"), and ghost-writer of Barry Goldwater's 1964 book *A Choice Not an Echo*; Senator Jesse Helms (R-NC), the "acknowledged leader of the pro-life, pro-family cause in the U.S. Senate" and sponsor of numerous bills and riders to prohibit sex education and require prayer; and last but not least, the Rev. Jerry Falwell.

Conclusion

Several political and/or religious conservative groups have gone on record opposing sex education in the schools. Does this opposition to sex education represent a threat to a democratic society? The answer is yes if their tactics take away the rights of others to express their opinions and if a small minority can take an extreme position to prevent the majority from exercising their constitutional rights. In our recurring arguments over what is "basic" and what is "frill" in education, we often lose sight of education's true goal: to produce people who *think*, for whom the knowable is not limited to the known, for whom curiosity, inquiry and choice are, in Dylan Thomas' phrase, the "force that through the fuse drives the flower." To the attackers of "secular humanism," sex education and the other assorted targets mentioned earlier, analysis, inquiry, skepticism, judgement and dissent are the true evils.

The greatest gift we give to coming generations is the freedom to think, to inquire and to choose. The new Right is chock full of old wrongs. Rather than leaving the power of the voting booth to the new Right censors, let us be certain to vote in school board elections as well as general elections. Let us charge the schools with exposing children to the widest range of views possible, for their decisions will be made in an increasingly complex world that ignorance will not make simpler, only more dangerous. Rather than zealous attempts to keep children innocent and parents unchallenged, let us have faith in and respect for children's ability to work, to love and to learn. Let us have the courage to confront our own hypocrisy and guilt about sex, love and morality. Rather than assuming that those who threaten our freedoms are merely "fringe" groups who cannot have real success, let us form new alliances as activists for freedom and for choice.

All of our heartfelt efforts will not cause the new Right threat to disappear. Theirs is a well-financed, well-organized movement that will be around for many years. What we can do, however, is reclaim God, family and country from the opposition. To challenge their attempted monopoly on morality, we must reaffirm our commitment to individual rights. We must restate the certainty of our belief that there is no contradiction between individual rights and parents' best hopes for their children. We must reassert our conviction that we are all—educators, parents, youth, clergy—threatened by this smothering attempt at control. We must rededicate ourselves to the challenge described by Martin Luther King, that each generation must fight anew to win and defend its most precious freedoms.

Notes

1. Conversation with Dorothy Massie, National Education Association, Teachers Rights Division, Washington, D.C., March 26, 1980.
2. Ryan W: Better pay attention to the man behind the curtain. *IMPACT 80* 1(3):3-4, 11, 1980.
3. Jenkinson EB: *Censors in the Classroom*. Carbondale, IL, Southern Illinois University Press, 1979.
4. Teachers find an increase in public school censorship. *New York Times*, Nov. 25, 1978.
5. *Report of the Fairfax County [VA] Council of PTAs Family Life Education Committee*, Appendix 2, Spring 1980.
6. Gorosh V: School nurses and sexuality-related needs of youth: Reconsidering the stereotype. Unpublished manuscript, 1980.
7. Council for National Righteousness: *Petition for Better Schools*. Buffalo, NY, CNR, no date (c. 1980).
8. Anchell M: Classroom for perversion. *Education* 90:241-244, March 1970.
9. Sex education—phoney name for academic pornography. Mimeo assembled for Christian Crusade by Gerald K. Smith, no date.
10. Survey finds teenagers are more conservative. *New York Times*, Nov. 30, 1978.
11. The First Amendment gets no respect. *Student Press Law Center Report* 3(2):43, Spring 1980.
12. The new right: A special report. *Conservative Digest* 6:9-21, June 1980.
13. Herbers J: Ultraconservative evangelicals a surging new force in politics. *New York Times*, August 17, 1980.
14. Washington for Jesus. *Interchange* 2(1):1, Spring 1980.
15. The politics of the right-to-life movement. *Interchange* 1:1-9, Spring 1979.
16. Fund-raising letter from Anita Bryant for Protect America's Children, Hollywood, FL, July 9, 1979.
17. Jenkinson EB: Why the new right wants to bring public education to its knees. Bloomington, IN, Indiana University, English Curriculum Study Center, 1979 unpublished speech to Indiana State Teachers Association, August 4, 1979.
18. Drive to put prayer back in schools gets strong backing. *Washington Post*, June 6, 1980.
19. Group fights for prayer in schools. *Washington Post*, Jan. 25, 1980.
20. American Legislative Exchange Council. *The 1980 Source Book of American State Legislation*. Washington, D.C., ALEC, 1980.
21. Sex education: Old Dilemmas feed attacks by 'new right'. *Education USA* 22(45):335ff, July 7, 1980.

HOW TO TEACH ABOUT SEX

In league with questions about what to teach in sex education are questions about how to teach it. These questions can take a large focus—"Should we institute a separate sex education curriculum or infuse the subject into existing courses?"—or can narrow to the small spotlight shed upon the teacher in the middle of class faced with a new and nebulous situation—"When teaching about genetic screening, do I talk only about pH, chromosome analysis, and anatomic capability, or do I address the non-biological concerns presented by the ultimate prospect of abortion?"

Here are collected a variety of approaches to the questions of how sex-related subjects might be treated once they've found their way into your classroom—how morals mate with their seeming antithesis; how ethical analysis and the scientific method mesh; how some classic pedagogy can be successfully applied to some less-than-traditional subjects. One article here, "Sex and Society: Teaching the Connection," traces an eight-week social studies unit on human sexuality from its rationale and objectives through its infusion and assessment, including throughout specific and adaptable teaching techniques that could be used to enhance the subject's presentation in any discipline.

This article offers perhaps the most cogent and winning example of sex education's potential within the existing curricula. The integration of sex education into related courses is in many cases a likely prospect and one upon which the science teacher can exercise influence.

The Case for a Moral Sex Education In the Schools

Sol Gordon

Reprinted with permission from
THE JOURNAL OF SCHOOL HEALTH,
Volume 51, Number 4, April 1981.
Copyright by the
American School Health Association
Kent, Ohio 44240

As a national effort, sex education has not been tried. The most optimistic estimates suggest that scarcely 10% of our nation's young people receive anything approaching adequate sex education in public schools. Of the remaining 90%, even fewer students are exposed to isolated lectures and basic reproductive facts—the "plumbing of human sexuality."[1] Furthermore, since only about 25% of concerned parents provide education about sexuality for their children,[2] our society persists in producing generation after generation of sexually ignorant and vulnerable citizens. Over one million teenagers will become pregnant again this year. This fact alone says nothing about the pains of venereal diseases, illegitimacy, abortions, sexual dysfunction, forced marriages and childhoods frequently cut short at age 13.[3] The rest of the story is about the innocent victims—abused children, countless people who are raped, exploited and dehumanized. This, despite the apparent preponderance of sex in the media and the common myth that young people already "know it all."

Knowledge is Not Harmful

We cannot realistically discuss the potential benefits of sex education without first rooting out the fears and myths which prevent the active promotion of good programs. Gallup, and other national pollsters over the years, consistently report that between 65 and 80% of American parents support sex education in the schools.* However, when confronted with the often-distorted claims of a vocal minority in opposition to the programs, logic fails; and these same parents sit passively by while curriculum after curriculum goes down to defeat.

The Great American Hangup? A secret belief that *knowledge is* harmful. "If you tell kids about sex, they'll do it!" (Of course, they are already doing it—but without the benefit of knowledge.) In fact, the earlier a young person engages in sexual relations, the *less* he or she is likely to know about sex.[2] Conversely, knowledgeable, informed adolescents are more likely to postpone sexual relations until they feel emotionally ready and are able to take the necessary precautions against pregnancy and VD.[2] There are unusual circumstances and slip-ups along the way, but these are exceptions to the general rule.

A Call for Values

But what should be taught? And whose values? Ultimately, sexuality programs cannot be taught without values. While teaching contraception, for example, it behooves the instructor to convey some basic guidelines, ie, that it is better that teenagers not get pregnant for both psychological and physiological reasons and that it is wrong to exploit or hurt other human beings. All other subjects, such as history, social studies and economics, are taught within the context of value systems. Why should sexuality be an exception?

---

*The Gallup Poll released January 23, 1978, reported that 77% of the public favored teaching sex education in the schools. There were few differences between Catholics and Protestants, even regarding teaching of birth control.

In social studies, a teacher doesn't say, "There are four main political systems in the world: communism, fascism, anarchy and democracy. They are all equally good. Choose one." No. The American teacher says democracy is best. We don't say, "There are two kinds of pedestrians: Those who jaywalk and those who don't. Both are equally good." No. We say that the one who jaywalks is not a good citizen.

In the same fashion, sex education should be taught from the perspective that it is wrong to take advantage of another person. People who have high levels of self-esteem are not as easily victimized as people who feel inferior. Stated another way, the function of a *moral* education is to encourage people to strive toward the universally accepted *ideals* of our democratic, pluralistic society and to present facts which facilitate responsible decision making.

We are a democratic society, and public schools are committed to its basic values as embodied in the American Constitution and the Bill of Rights. These "values" are not static, as evidenced by our need to amend the Constitution from time to time. It is also easy to appreciate that irrelevancy of arguments used against sex education with reference to "community standards." We recall that the "virtues" of racism were taught to millions of children with the same logic. Racist attitudes did reflect community standards in many sections of our country. We need to teach to the highest aspirations of our society regardless of what extremist factions, whether from the right or left, believe is best for us.

We must teach the value of equality of the sexes, dignity and respect for all human beings . . . against racism, sexism and the double standard.

The Salt Lake City Schools have taken leadership in offering moral education as part of the regular curriculum. Here are a few of their basic principles which would also be a good introduction to a sex education program:

1. Each individual has dignity and worth.
2. A free society requires respect for persons, property and principles.
3. Each individual is responsible for his or her own actions.
4. Each individual has a responsibility to the group as well as to the total society.

Moral vs. Moralistic

There is a vast difference between being moral and being moralistic. Moralistic presentations seek to impose a personal point of view in a dogmatic way. For example, one could state that, in point of fact, organized religion believes it is better to wait until marriage to have sexual intercourse. However, it would obviously be moralistic to say that if you do have sex before marriage, you'll go to hell. Statements of this kind are clearly inappropriate in a public school, although they may be appropriate in a parochial setting. Programs are best taught from a moral perspective which encourages the accepted aspirations of our society while preserving individual liberty.

Given these guidelines, even the most controversial topics may be discussed in school within a moral framework. Subjects such as masturbation, homosexuality and abortion could be studied in the context of a range of opinions and research that adhere to scientific principles. People make mistakes, and there would therefore also be alternatives presented to the teenager who becomes pregnant or who contracts venereal disease. Who would dispute the need for immediate treatment and disclosure to the involved partner(s) once a diagnosis of VD is made? A 15-year-old with one child needs to be protected from a second pregnancy while still a teenager and needs to be helped to finish high school. The least we can be expected to do as educators is to help people turn their own acknowledged mistakes into lessons.

Quality Family Life Education

My view is that a quality sex education program—perhaps more appropriately entitled "Family Life Education"—must include the following principles:

1. *Enhancing the self-concept*—with the knowledge that young people who feel good about themselves are not available for exploitation and don't exploit others. In its use of sex as a means of selling products in soap operas, prime-time TV and rock music lyrics, society communicates that sex is the most important aspect of life. This creates for many an impassable barrier to healthy adult adjustment. People who are consistently "grading" themselves against unattainable goals are prevented from developing esteem for who *they* are and will find it exceedingly difficult to establish mature relationships or act in a sexually responsible manner.

2. *Preparation for marriage and parenthood*—understanding the interpersonal skills and responsibilities that strengthen family life such as communication, compromise, a good sense of humor.

3. *Understanding love* as the basic component of a person's sexuality, including help in deciding "how you can tell if you are really in love."

4. *Preparation for making responsible decisions* in critical areas of sexuality based on a universal value of not hurting or exploiting others.

5. *Helping people understand the need for equal opportunities* for males and for females. Schools have a responsibility to discourage sexism.

6. *Helping people develop tolerance and appreciation for people* who don't conform to the traditional norms regarding marriage and child bearing.

7. *Contributing to knowledge and understanding of the sexual dimension of our lives,* including the realization that we are sexual beings at birth, that we continue to have sexual needs and will be building our sexual identities throughout life. This also necessitates an appreciation for the wide range of sexuality, with the recognition that sexual expression is neither limited to heterosexual, genital intercourse nor to reproduction. Feelings, communication and values should be the focus of Family Life Education.

The most successful programs will be those which raise young people's level of self-esteem. Young people who feel good about themselves and who feel comfortable with their values in the midst of their own culture are more likely to absorb information openly and use it to their best advantage. In this atmosphere, the transmission of values and information through sex education programs is most likely to be successful.

These principles have been used to suggest topics and content to be included in a model sex education curriculum for K-3, middle grades 4-6, grades 7-9 and senior high school.[4] This curriculum focuses on putting sexuality into perspective, "Love and caring for another person is more important than sex appeal."

Opposition to Sex Education

A fully documented case against the tactics of the opposition is made by Scales, but a few words are in order in the context of this article.

The bulk of the opposition to sex education comes from small, articulate, extremist groups which are well-organized and sometimes fanatical. They represent less than five percent of the population. Nevertheless, superintendents and principals of schools are invariably overly responsive to these factions. These same administrators and school boards have lost sight of the fact that dealing with controversial issues is the very heart of the democratic process.

The opposition frequently throws up Scandinavia as a center of "moral decay." Only in the last decade have the Scandinavian countries had compulsory sex education; and, in fact, the evidence is mounting from Swedish sources that there has been a reduction in unintended pregnancies, VD, pornography and most sex-related crimes.

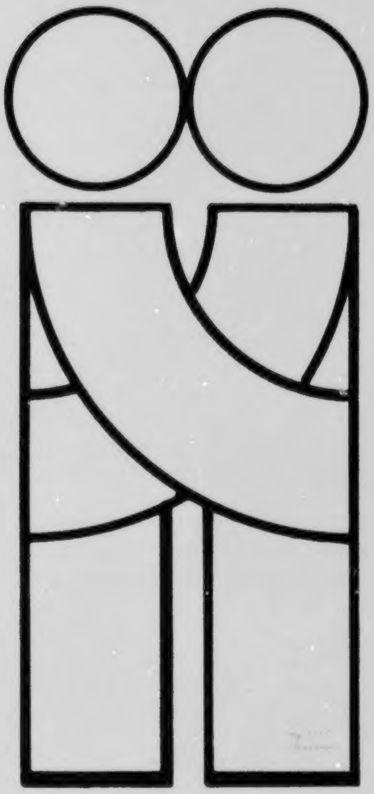
It might be instructive for those intimidated by the cries of the opposition to consult *Guidelines for Sex Education in the Swedish School System*[5] for a thorough consideration of what teachers in Sweden are encouraged to teach. The following selections from those guidelines provide an example of how moral principles can be incorporated into a sex education curriculum:

"A worthwhile aim is to combine sexual life, togetherness and respect for the integrity of the other person. *This, in the Commission's opinion, is a central value judgment that should set the tone of sex education as a whole.* (Emphasis is mine.)

- There apply to sexual relationships the same demands for consideration to others and reponsibility for the consequences of action as hold in other fields of life. This means, first and foremost, that no fellow being should be regarded exclusively as a means for the satisfaction of another's interests and needs. In the sexual as in other fields, any form of mental pressure or physical violence constitutes a violation of the other person's integrity.
- Teaching should support a standard that is embraced by the great majority of the Swedish population, namely the rejection of 'unfaithfulness.' By unfaithfulness should be meant in this context a disloyalty rather than a sexual act in itself.
- Teaching should reject the traditional double morality by which moral sentence is passed upon women for actions that a man can commit with impunity. The rejection of sexual double morality is one aspect of the function of teaching to combat prejudice regarding sexual roles.
- The demand for equal rights entails also that teaching should argue against racial discrimination in the sexual field.
- The condemnation of variations in the direction of people's sexual urge should be counteracted, and a considerate attitude to such phenomena promoted.
- Teaching should promote recognition of the right to a sexual life on the part of the physically and mentally handicapped, the mentally diseased, the inmates of prisons and others tied to institutions. Prejudices against the sexual life of the elderly should be combatted.
- Teaching should proclaim sexual tolerance in the sense of respecting the right of others to speak for, and live by, sexual standards that oneself rejects. Such tolerance, however, cannot apply to attitudes in the sexual field which are incompatible with the fundamental values which have to be promoted. Teaching, for instance, cannot take a tolerant view of racial discrimination in this field, or of double morality.

Proposals thus far have examined the fundamental values which teaching should maintain and promote. Among the *controversial values,* the Commission lists the following—which should thus be treated without taking sides.

- Ethical attitudes to abortion. On this question, some groups consider that abortion should only occur on specific medical and other grounds, while others consider that the wishes of the woman should be paramount. The school cannot be involved in arguments in favor of either point of view. It is of the greatest importance, however, that the arguments of both groups be correctly reported.
- Premarital sexual relationships with the person one intends to marry or permanently live with are regarded as self-evidently acceptable by the great majority of the Swedish population. About half of those with a personal Christian faith, however, are convinced that sexual life together, in accordance with God's will, can take place only within marriage. Such parents and their children must be able to assume that their view will be presented in the schools in a proper and respectful manner. Teaching must not take sides against their view. It is another matter that teaching must devote considerable time to the questions of personal premarital relationships."[5]



P.E.

Support for Sex Education

Most organized religious groups support sex education in the schools. The Interfaith Statement on Sex Education released by the National Council of Churches, The Synagogue Council of America and the United States Catholic Conference, Family Life Bureau, makes a strong positive statement about sex education in the schools. With specific reference to schools, it states:

> a) Such education should strive to create understanding and conviction that decisions about sexual behavior must be based on moral and ethical values, as well as on consideration of physical and emotional health, fear, pleasure, practical consequences or concepts of personality development.
>
> b) Such education must respect the cultural, familial and religious backgrounds and beliefs of individuals and must teach that the sexual development and behavior of each individual cannot take place in a vacuum but are instead related to the other aspects of his life and to his moral, ethical and religious codes.
>
> c) It should point out how sex is distorted and exploited in our society and how this places heavy responsibility upon the individual, the family and institutions to cope in a constructive manner with the problem thus created.[7]

Parents as Primary Sex Educators

There is concern among some parents (often purposely intensified by members of the opposition) that sex educators are attempting to replace parents as the primary sex educators of children; however, there is no basis for this fear. Even the best, most comprehensive sex education program seeks only to supplement the primary responsibilities of parents. The schools, religious institutions and community agencies all have a *secondary* role in providing information and services for young people; the *primary* responsibility for educating children about sexuality from birth to adulthood always has been, and must remain, in the home. Parents provide the love, warmth and caring that are the foundation of many future values and attitudes concerning sexuality; and family life is strengthened by parents who take an active role in communicating with their own children.

Conclusion

Studies that cite the failure of sex education programs in the United States and abroad make the mistake of lumping together both optimal and inadequate programs, and then drawing sweeping conclusions based on the faulty evidence. Nevertheless, a good general principle is: *Don't exaggerate the value of sex education in the schools.* It can improve the situation of many people, transmit information, reduce sexual-related guilt and even reduce unintended pregnancies and venereal diseases by perhaps 10-20% over a 5 to 10-year-period. However, without correspondingly reducing racism, sexism, poverty and individual vulnerability—the most compelling reasons for irresponsible sexual behavior—we should not hope for overwhelming success.

Communication about human sexuality cannot be left to chance, myths, superstitions or the sensational anti-sexual images in the media. A moral sex education program in the public schools can contribute to sexual health and be an important element in the prevention of sex-related problems.

Notes

1. Kirby D, Alter J, Scales P: *An Analysis of U.S. Sex Education Programs and Evaluation Methods.* Atlanta, Center for Disease Control, 1979.
2. Gordon S, Scales P, Everly K: *The Sexual Adolescent: Communicating with Teenagers about Sex.* N. Scituate, MA, Duxbury Press, 1979.
3. Alan Guttmacher Institute: *Eleven Million Teenagers.* New York, Planned Parenthood, rev ed, 1980.
4. Gordon S, Dickman IR: *Schools and Parents–Partners in Sex Education.* New York, Public Affairs Committee, Inc., May 1980.
5. Humanist Manifesto II. *The Humanist,* 33(5): Sept/Oct 1973.
6. *Proposed Guidelines for Sex Education in the Swedish School System: A Summary of the Recommendations Contained in the Official Report.* Stockholm, the State Commission on Sex Education, 1974.
7. National Council of Churches, Synagogue Council of America, U.S. Catholic Conference: *Interfaith Statement on Sex Education,* 1968.

Can Bioethics Be Taught?

George H. Kieffer

Reprinted with permission from
THE AMERICAN BIOLOGY TEACHER,
Volume 41, Number 3, March 1979.
Courtesy of the
National Association of Biology Teachers, Inc.
11250 Roger Bacon Drive
Reston, Virginia 22090

Over the past several years a revolutionary change has taken place in the relationship between science and society, and science has become a social issue. Science is in a vastly more powerful position to influence world events than at any other time in human history. Though it will not serve our purpose here to review the long list of recent scientific and medical advances that demonstrate this truism, those innovations resulting from the "new biology" would figure prominently in such a catalog (Kieffer 1977 and 1978). How should our society cope with the new issues especially when there is no clear-cut ethical framework to guide us? Changes in both our societal and in individual ethical perspectives are imperative.

Today's students will significantly influence the future direction of society. However, the aura of glamour, excitement, and interest that surrounded social activism in the past is gone for this group, as well as for the majority of our citizens. In the late 1960s and early 1970s, large numbers of students and young people were actively involved in environmental issues and social, biological, and political questions, but "influencing social values" and "keeping up with political affairs" are no longer high priority goals (Astin 1977). Such issues today fail to capture students' interest, much less their concerned involvement. Several reasons have been cited as the cause of this difference including:

1. The present generation of students has grown up with many of these problems and has become immune to their ramifications;
2. Students' interest in idealistic values has declined and been superseded by a growing interest in materialistic goals including wealth, security and status.
3. Students are disillusioned; when their attempts to correct the flaws in society met with little or even negative success, they dropped out, adopting a "the system is too big to change" attitude.
4. Finally, many people refuse to believe that our society has problems. In their view, we—as individuals and as a society—are really quite well-off, and if things are not getting better as quickly as we would like, certainly they are not getting worse.

For whatever reasons, it is apparent that individuals are not as easily moved to become involved in social problems as they once were.

Major problems still exist, however. Some have been momentarily alleviated; fewer have been corrected. We are not as indiscriminate as we were in the past about polluting our lakes or our watersheds with toxic chemicals. Guidelines have been developed to regulate the use of fetal tissue for research purposes and the manipulation of genetic material in organisms in research projects is now under some control. All of these measures are "first generation" responses—measures initiated to prevent immediate crises. Until now, our main objective has been to avoid a biological calamity. We are now entering a new phase aimed at finding effective and long-term resolutions for the issues arising from scientific discoveries and their technological applications are not so easily solved that a few general guidelines will make them go away.

Second-generation problems require analysis and deliberation. To respond adequately to them will require fundamental changes in our attitudes. Education at all levels is in a position to contribute much to this process. We must introduce a humanistic direction to our science teaching, changing the emphasis from the purely cognitive to the affective. As a beginning, we can insert into the curriculum what has been labeled the humanist's "three Rs": Responsibility, Realization of self, and Relating to others (Palm 1974). Essentially the "three Rs" can be reduced to the following proposition: We are free to make choices but we are bound by the consequences of our choices. We are not free to ignore how our choices affect others, both now and in the future. The exercise of freedom generates this responsibility.

Many science teachers who have posed socially relevant questions to their students experienced misgivings as to how they should have their students evaluate new issues. Calling students' attention to such problems is a relatively simple task—the popular media are filled with such information. It is, however, another matter to respond effectively to the questions students raise once these issues are brought to their attention. "How should we evaluate the uses of the new biology?" is a question that continues to perplex us long after an awareness of the problem has been created. Biologists find this a particularly difficult problem because scientific training usually does not include a methodology through which value questions can be analyzed. As a result, many instructors shy away from topics that are value-laden; or if they do introduce them (usually as an optional part of a unit or course), they leave students to work out the issues on their own with little or no guidance. Often such an approach leaves students bewildered and frustrated. A more serious result is the complete rejection of science by some students, which, in their view, has created serious hazards for society.

Furthermore, settling ethical issues by allowing any choice is unacceptable. This approach fosters an ethical pluralism where any choice is as good as any other, and it is simply a matter of preference whether this or that value is selected. The only criterion that must be met is sincerity. Of course, all ethical views are highly individual, but to allow a moral "free-for-all" is incompatible with having a well-ordered society. Unlimited freedom, be it social or ethical, carries with it the seeds of its own destruction. Contempt for legitimate authority and noncompliance with laws are all too frequently the outcomes when moral rules are out of touch with reality. If history has any lesson to teach, it is that a total concern for oneself leads to socially disruptive behavior.

Ethics Methodology

For the past several years, I have presented value questions to a wide range of audiences—from concerned laypeople with varied backgrounds to first-year college students, to graduate students, to professionals trained in the natural sciences, the social sciences, philosophy, and theology. All of these groups felt the pressing need to formulate a method that could be used to clarify moral dilemmas and resolve ethical conflicts. An approach for judging the ethical merit of a specific scientific or technological advance so that live options could be formulated for individuals and also assisting directly in the broader enterprise of developing public policy was needed. The remainder of this article describes the approach that emerged from these discussions. It has proven effective in responding to value questions. I present the method especially to this audience of professional biologists to demonstrate that some methodology does exist that can be applied to any learning situation and that does not require extensive training in the ethical, philosophical, or theological disciplines.

Ethics deal with "the good," and ethical decisions are designed to promote the good. Ethics ask and try to answer questions regarding what action is right; or in ethical terms, is the *ought* behavior. By definition, an ethical decision is based on reason alone—not on revelation—and, therefore, some mental process is followed in establishing an ethical position. Ethical decision-making involves, then, rather definitive steps. We can call this "ethical methodology." Ethical methodology is the procedure one follows to arrive at a decision based on weighing different values. As with any procedure, we can improve our ability to make ethical decisions with practice if a rational methodology is used rather than taking a haphazard or intuitive approach to making value judgments.

In defining ethical methodology, we introduced a new concept—the concept of values. In ethical decision-making different values are compared; and in weighing these values, an ethical judgment is reached. Characteristics of values include:

1. Values indicate what is judged to be "the good."
2. Values imply preference.
3. Values are supported by rational justification.
4. Values countenance strong feelings or intense attitudes.
5. Values specify a course of action.

To qualify as a value, a statement must satisfy all of these criteria. This requirement differentiates a value statement from a purely technical statement. The following are examples of two extremes of value statements: (1) All abortions are wrong. (2) Abortion is an exercise of a fundamental right of women to the privacy of their own bodies. Both statements reveal what is judged as "the good"; both imply a preference that can be supported by rational justification. Certainly each provokes strong feelings on the part of its supporters; and each specifies a course of action.

This introduces a new problem, however: because most ethical decisions involve choices between different outcomes, and humans are likely to place different values on different outcomes, how do we choose the *ought* behavior? The seemingly simple question of what is "the good" has eluded moral philosophers for centuries. In making ethical decisions, this question will not occupy our attention because in responding to the questions posed by the new biology, we are engaged in that branch of ethics called "normative" ethics (as opposed to metaethics that is concerned with epistemological or semantic matters as they relate to right conduct).

Normative ethics deals with developing a set of principles that guide us in judging which acts are right or wrong, good or bad, obligatory, permissible, or forbidden. Ideally, normative ethics embodies some core of values that serve as the foundation for important value decisions. They function as guides for directing correct or *ought* behavior. To have a normative ethic is to be prepared to do something; and the more developed the normative ethic, the more forceful and systematic will be the course of action. This is the kind of ethics required to respond properly to the issues arising in the life sciences.

Humans develop their ethics based on experience through discussion leading to communal acceptance of what appears to be right and good and rejection of what is judged to be wrong or bad. Further, concepts of what is ethical, right, and good change as humans acquire new knowledge and experience or through continuing debates. The touchstone of ethical choices is the human judgment of whether something is right and good. Using these tactics, societies and individuals can develop effective ways of sanctioning the uses of new knowledge and technology, even when these uses initially conflict with existing societal or individual legal, moral, or ethical codes. How can this be done?

One way to examine an ethical issue is this:

1. Perceive that an ethical problem exists by stating it in plain language.
2. List all recognized alternative courses of action both immediate and long term.
3. State all the values that bear on the identified courses of action.
4. Analyze the individual values and their consequences in ethical terms.
5. Rank order the studied values on a preferential scale from most to least desirable.
6. Make a selection on the basis of this scaling and analysis.

This approach is useful for two reasons: first, it insists that a choice be made (the issue under question is not left hanging); and second, the choice is validated in ethical terms. The procedure begins with the recognition of an ethical problem. This step is not always easy, but it can be done. One way of focusing attention on a specific issue is the familiar case study approach because it poses real issues concisely. Case studies are descriptions of real or hypothetical events that illustrate one or several ethical dilemmas arising from a particular scientific or medical application. An excellent source of case studies related to biomedical issues is *Case Studies in Medical Ethics*, edited by Robert Veatch (1977). The important point to emphasize in this first step of ethical analysis is that the identification of the problem should be as clear as possible to reduce uncertainty and ambiguity. By insisting on this, the discussion can be more easily kept on track. I have found it useful to pose the issue in question form. This approach encourages further analysis because (1) the problem is clearly stated and it must be answered; and (2) a series of steps will be required to arrive at the solution to the problem. I label the statement of the ethical issued in question form the *value object*—that object about which a value judgment must be made. By giving it a special name, students will be impressed with the idea that clarifying the ethical problem under study has a distinct role to play in ethical reasoning. The ultimate point of this method is always—has the question been answered? Again, careful formulation is essential. Figure 1 illustrates the first step in posing an ethical problem.

The next step in the procedure is listing *all* possible courses of action. A common error here is to restrict the choices to as few as possible, usually in "either-or" form. Humans seem to prefer to minimize complexity by reducing the number of choices to manageable numbers, but students must be encouraged to progress beyond this stage.

After identifying all of the possible courses of action, the next step in the methodology requires that we list all conceivable values that bear some relationship to the case under study. Here, too, the obvious difficulty is with identifying all of the pertinent values. Again, it is helpful to formalize each value by stating it in writing, only in this instance, these are rendered as simple declarative statements. Each sentence should embody a single value. This is desirable because analysis can be more effectively done if only single values are compared. Figure 2 lists examples of value statements.

Figure 1
Posing an Ethical Problem—
The Perception of the Problem
(Step 1)

CASE STUDY:	Food Incentives for Sterilization
Value Object:	Are food incentives for curbing family size a just policy for bringing about population control?
CASE STUDY:	Sterilizing the Retarded Child
Value Object:	Can a mildly retarded child be sterilized only with the consent of the mother?
CASE STUDY:	The fetus as an "organ farm"
Value Object:	Should a genetically related, six-month-old fetus be deliberately sacrificed so that its kidneys can be transplanted to an adult whose death from kidney failure is imminent?
NOTE:	Students should have available a full description of the case study, not simply a one-line description as is given above.

As I stated previously, values must be supported by rational justifications; therefore, students must defend the positions suggested by their respective values. Because this process engages students in a serious, and sometimes agonizing, search for ethical validity, it is the most instructive part of the whole procedure. Of course, meta-ethical and metaphysical opinions have their place in such discussions because the basis of any ethical theory ultimately derives from some particular value theory. Articulation of personal world-views is extremely valuable both to the individual enunciating the view, who is forced to identify and then defend his/her position to others, and to other students whose own views can be broadened or strengthened by the interchange.

Rank-ordering of the identified values is another difficult part of the procedure. This is essentially what ethics is all about—the rank-ordering of values. Values imply preference; therefore, values between two people, applying the same methodology, can conceivably result in two different courses of action. This is, no doubt, the most bothersome aspect of ethical reasoning.

Are there ways we can adjudicate this variety of preferences so that some reasonable consensus can be reached? Unfortunately, the answer is no. No unmistakable set of rules once and for all settles ethical questions unless one leaves the domain of ethical reasoning and considers only moral absolutes. Though there are many different types of moral logic, two or three stand out in the field of biomedical technology. Thus, there are some measures that can be used so that though no one value can be the sole claimant to ethical validity, there may be only a few *good* answers. Furthermore, those who engage in ethical analysis must realize that the objective is not to force an ethical position on a student. Instead, the emphasis should be on presenting alternatives and validating choices in *ethical terms.* We are still in a period of study and analysis; societal consensus is yet to be reached in many cases.

One formula for evaluating the rightness of an action is to compare the consequences with one's value set by simply asking, "Could I live with this?" If the answer is "yes," one can assume that the selected action is consistent with one's own values. The course of action dictated by the value is then judged as ethically valid. This procedure is nothing more than placing oneself in another's shoes, and postulating whether a particular action would be acceptable if one had to personally experience the consequences. If, on applying this test, one is emotionally uncomfortable, then it is necessary to ask, "Why does this action bother me?" A reconsideration of the value is in order to search for, and perhaps remove, the disturbing element. This process may lead to an entirely new ethical statement of action.

A second method for testing the validity of an ethical choice is determining whether one can apply the more general principle of universalizability. This principle assumes that because a position specifies right conduct directing what ought to be done, then any person under similar circumstances ought to perform the selected behavior. Directly related to this principle is another aspect of ethical decision-making, which asserts that simply deciding to take a particular action has no ethical weight because at a later time and under exactly the same circumstances, an individual might decide to act differently. Ethical behavior has broader implications. Once the decision is made that action X is ethically correct, then any individual at any time,

Figure 2
Examples of Value Statements

CASE STUDY:
Food Incentives for Sterilization

1. The right of individual self-determination includes the right to procreate.
2. Society has the right to protect itself from forces or actions that might upset or destroy it or prevent it from carrying out social policy aimed at promoting the common good.
3. Discrimination against a single group or groups for any reason is ethically unacceptable.
4. Incentive programs are unjust since they tend to exploit poverty.
5. Sterilization programs without adequate social security policies irretrievably threaten the welfare of those sterilized.
6. Economic injustice, not lack of food, accounts for much of the suffering in the world today.

under similar circumstances, ought also to take action X. Thus, the test of ethical validity according to the principle of universalizability, is this: What would be the results if everyone did this? Both long-term and short-term consequences must be considered in responding to this question.

The principle of universalizability is a key test for the validity of ethical positions, and is, in fact, considered so important that many ethical philosophers contend that an individual deserves respect as a truly moral person only if that person is willing to universalize his/her ethical judgments.

The "proportionate good" view is a third test of ethical validity. In this approach, an act is judged ethically valid, or good, when it helps people; it is ethically invalid, or bad, when it hurts people. Situations are examined and relative choices made on the basis of what is judged to offer the most good. This view is known as "consequentialist ethics." Its proponents contend that most of us in our daily lives make decisions on the basis of the proportionate good. "Proportionate good" really means that moral flexibility is required; thus, some acts that may be performed in certain circumstances may not be performed in others. The only test is the greatest good.

The consequentialist school of ethics is at variance with the universalizability principle. Rather than insisting that a stated ethical behavior is applicable to all individuals in similar situations, the proponents of proportionate good insist that sometimes specific actions are right; sometimes they are wrong; sometimes they are good; and sometimes they are bad. On questions surrounding the ethical issues of abortion, egg transfers, behavior modification, life-prolonging medical treatment, population policies, environmental questions—or any area where an ethical judgment must be made—there are no absolutes, no "open and shut" authority. Ethical matters are not settled in advance.

Fletcher (1974) suggests these guidelines for making proportionate good choices:

1. Compassion for people as human beings;
2. Consideration of consequences;
3. Proportionate good;
4. Actual needs take precedence over ideal or potential needs;
5. A desire to enlarge choice and reduce chance;
6. A courageous acceptance of our responsibility to make decisions and of the outcome of our decisions.

To continue with ethical methodology, the next task is to display a rank-order of options for policy choice. Keep in mind that a single option may not result from the analysis, nor is it absolutely necessary at this stage in our thinking. Converting values to viable options is also a complex part of the procedure. The previous testing of value positions should have clarified the pros and cons so that respective values can be compared. One useful process here is to identify "trade-offs," as an economist might do in deciding on one policy over another. This method may not be useful in all situations but it is effective in determining the benefits of one policy over another. Ethicists might, for example, consider the advantages and the disadvantages of inaugurating a national health service; on the basis of the "balance sheet" developed in this comparison, a choice could then be made. In other circumstances, the principle of universalizability might be applied to settle an issue such as the provision of health care for all in need, regardless of their ability to pay.

When these methods for making decisions are successful, ethical preferences can be chosen from practical possibilities so that, even though the best decision that satisfies all concerned cannot be made, at least the worst decision can be avoided. This is the object of using an ethical methodology. Not every option possible is ethically valid. By forcing students to focus on value considerations and by applying a few relatively simple ethical measures, we can show students that not all the answers are viable alternatives. Thus, we reduce ethical plurality by minimizing the available options to the few that have stood the scrutiny of ethical analysis.

Biology Teachers and Ethics

This article describes some practical ways to examine the process of making ethical decisions. My purpose in presenting these methods has been to encourage biology teachers to actively engage themselves and their students in the search for a new ethical structure. We must move from merely describing the many problems arising from the new biology to a second-generation phase—an analysis that can lead to the effective resolution of the many vexing problems we face. One need not be a professional ethicist to consider these questions but neither will the adoption of these simple roles make one a practiced and polished ethicist.

Much progress is being made in teaching students the techniques needed to analyze value issues, and many schools have instituted programs in value clarification. Now we need to apply our knowledge.

Ethical decision-making is difficult at best. No value decision is made from perfect knowledge, and because we cannot see into the future, we will make mistakes. We will have false starts, but we must accept them. To accommodate the changes in biology and medical technology, we must change our ethical thinking. I invite you and your students to join in this quest for a new ethic for the new biology.

References

1. Astin, A. 1977. The new realists. *Psychology Today* (September 1977).
2. Fletcher, J. 1974. *The ethics of genetic control.* Garden City, New York: Doubleday.
3. Hardin, G. 1974. Living on a lifeboat. *BioScience* 24:10.
4. Kieffer, G.H. 1977a. Ethics for the "new biology." *The American Biology Teacher* 39(2):80.
5. ________. 1979. *Bioethics: a textbook of issues.* Reading, Massachusetts: Addison Wesley Publishing Company.
6. Palm, A. 1974. Human values in science. *BioScience* 24:11.
7. Veatch, R.M. (Ed.) 1977. *Case studies in medical ethics.* Cambridge, Massachusetts: Harvard University Press.

Sex and the Biology Teacher

Dolores Elaine Keller

Reprinted with permission from
THE AMERICAN BIOLOGY TEACHER,
Volume 34, Number 7, October 1972.
Courtesy of the
National Association of Biology Teachers, Inc.
11250 Roger Bacon Drive
Reston, Virginia 22090

The 1970s have been exploding with sex—and exploiting it. We are bombarded with sexy rock music and dance, and we are offered the most explicit scenes of sexual acts on the stage and screen. In print we have a morass of sexual literature: there are pornographic newspapers and books, and sex also pervades scholarly and creative writings. After all this notoriety we may wonder what is left of sex for the biology teacher: what approach should be used in the classroom, what subject matter should be selected, and what laboratory experiences—if any—remain, if sex is to be meaningful and still relate to the overall curriculum?

Scientific Circumlocutions

Unfortunately most biology teachers have been approaching sex from a sterile pedagogic perspective—clothing their groins in the synthetic fabric of scientific words. We have been hiding behind gametogenesis and have been safely pronouncing testosterone, estrogen, and progesterone while summoning forth our hypothalamus- and follicle-stimulating hormones and luteinizing hormones to elucidate the proliferation of seminiferous tubules and the secretion of the prostate as mature spermatozoa wend their way through epididymis, vas deferens, and urethra, discharge through the genital pore of the penis, enter the vagina area and the fallopian tubes, and fertilize the ovum, which is eventually implanted in the endometrium of the uterus.

How learned, how lengthy, how relevant!

And should we dare mention copulation—or, preferably, mating—we summon forth the reliable term *amplexus* and again feel confident that our scientific vocabulary has overcome the common language, our science has overshadowed feelings, and our biology has outstripped sex.

But if we are willing to put aside our notions and our lectures about sex, perhaps we can gain some insight into the problems presented by the changing role of the biology teacher and of sex in today's society. Let us begin by asking several questions about sex. Asking is a very good beginning. I am reminded of the limerick:

> There once was a girl from St. Paul
> Who went to a sex orgy ball.
> She carried all sizes
> Of pills and devices
> But nobody asked her at all.

The Essence and Purposes of Sex

What is the essence of sex? Male-female, his-hers, stamen-pistil, androgen-estrogen, penis-vagina, long hair-short hair, pants-skirt, breadwinner-housekeeper, dominant-submissive? When we pare these things down, when we discard cultural and social conventions, when we divest sex of its tubes, pouches, chambers, tissues, appendages, glands, chemicals, rituals, initiations, lights, sights, and sounds, the essence of sex is single cells. When stripped of its aura, when removed from romance, sex has to do with single cells—whether they be single cells that join to form a new individual or single cells that squeeze off parts of themselves as they participate in the formation of a new entity.

What is the purpose of sex? Certainly asexual reproduction is more efficient, less demanding of a species, and more predictable in its outcome. Why, then, sex? If we look at sex from the aspect of genetic variability and species survival we can appreciate the ingenuity of nature in devising so many procedures,

P.E.

so rich a variety of behavior patterns, so broad a spectrum of colorful plumages to insure sexual matings. And, because sex is necessary for long-term survival, why not embellish it with mystery, romance, and indeed pleasure?

Once we have understood these factors we can explore the concept of the sexes. We can think of sex as having two distinct lines: male and female. Traditionally, biologists have tended to regard the passive, sluggish cell as female and the active, aggressive cell as male. Where there are no morphologic distinctions between two mating lines the customary viewpoint has been that the more active, donor cell is positive, or male, and the less active, recipient cell is negative, or female. In *Paramecium* conjugation we refer to the "male" migratory nucleus and the "female" stationary, or passive, nucleus. Even when speaking of the lowly bacteria we show the traditional bias as to the role of the sexes: in conjugation one bacterium acts as the genetic donor and therefore is considered male. It contains a transmissible genetic element, or sex factor, usually called the fertility (F) factor; and because only the males harbor this factor they are designated F-positive. In conjugation the other bacterium, which lacks this genetic element and acts as the genetic recipient, is considered female and is called F-negative.

This concept has perfused the literature of biology and has permeated the classroom for a long time. For some it led to the Victorian four-poster bed, for others to the Freudian couch. But the idea of male dominance, in biology, goes back at least 2,000 years—to that old reliable, Aristotle. He considered the semen to be the active element that organized the substance supplied by the female. Aristotle contended that the female had a passive role: she was merely the custodian of matter waiting to be given form by the male. So the tradition-bound biology teacher of today passes on the heritage of prejudicial nomenclature—reinforcing the notions of male activism and female passivity, male dominance and female submissiveness, the male donor and the female recipient, the positive male and the negative female.

The spectre of the castration complex haunts us all.

If these were the only considerations I would tend to let matters rest and not rush to condemn myself and my male colleagues—who, I am sure, feel no need for my confirmation of their sexual role. But recent research has produced some rather startling results, which may require a complete overhaul of our thinking and teaching about sex and dominance.

Basic Femaleness and Hormonal Change

I am sure each of us traces the development of sexuality to the hypothalamus-pituitary-gonad axis activated during early adolescence and mediated by the sex chromosomes received at conception. A person with an XX complement of chromosomes undergoes, at adolescence, ovarian activity and a variety of secondary sexual changes, resulting in an adult female; similarly an endowment of XY chromosomes causes testicular response to pituitary activity, producing an adult male. But although this is the traditional presentation of the onset of sexuality, it contains several puzzling inconsistencies.

The first is that even though genetic sex is established at conception, anatomic sex is not apparent during early embryologic life. The precursors of the male system, the wolffian ducts, and of the female system, the mullerian ducts, develop together and exist for a time side by side. Also the genital ridge, the precursor of the gonads, remains undifferentiated until, perhaps in response to a message mediated by the XX or XY chromosome arrangement, the sex of the developing individual is announced and either the cortex of the genital ridge develops into ovaries or the medullary portion becomes testes.

Another inconsistency is that high levels of testicular activity are found in males at a specific period of early development: prenatally in some species, in early postnatal life in others. This particular event has a profound influence on the origin of sexuality and male-female differentiation and behavioral orientation. Early work, in the 1930s, on rats (Pfeiffer, 1936) showed that neonatal hormone activity was important for development of sexuality. More recent studies in England (Harris, 1965; Harris and Levine, 1965; Levine and Mullins, 1966) and in the United States (Young, Goy, and Phoenix, 1964; Goy, 1966)—still on rodents—confirmed the importance of early testosterone (either prenatally or shortly after birth) in producing a functioning male.

Psychosexual maleness apparently requires the early presence of testosterone: either before or directly after birth, during a limited period of development. No comparable hormonal effect is required for femaleness. Apparently in mammals the general body plan and psychosexual endowment is *female*, and unless an early, limited amount of testosterone is secreted (evidently by the mediation of the XY chromosomal complex) a female results. Evidence points to the hypothalamus as being the controlling site of early release of testosterone. So brain centers become masculinized in normal males by the presence of testosterone in a critical period of development. This finding was confirmed a few years ago (Goy, 1966) in rhesus monkeys, a species whose normal sex behavioral differences at an early age were defined by Harlow and his workers (Harlow, 1965). Genetically female monkeys that were treated briefly with testosterone in utero showed male social behavior from an early age, and as they matured they menstruated through their penises. It is important to note that even though the genetic females were showing masculine behavior their production of hormones was within the range of that of normal adult females—and no significant amount of testosterone was detected in their blood. These studies dramatically confirm the notion of the generalized female orientation of the mammalian brain.

Studies of prenatal exposure of genetically female human beings to androgens by reason of adrenal-cortex anomalies or maternal use of androgens tend to confirm this masculinizing structural and behavioral development. However, experimental data on humans are necessarily scant. Furthermore, the gender role among humans is strongly influenced by social experiences, which may override hormonal and chromosomal aberrations.

(Is male homosexuality a result of too little prenatal testosterone or of excessive production or therapeutic use of estrogen in pregnancy or perhaps of the continuing use of a contraceptive pill during an unsuspected pregnancy, so that the fetal genetic male is overdosed with female sex hormones? This is, of course, speculation.)

Basically, then, it appears that the mammalian brain is female—regardless of genetic sex—and that masculinity is the result of the influence of fetal androgens, which convert this female brain to a male brain during a few critical days of development.

For a New Outlook

While it is still too early to extrapolate these animal findings to man, it is at least apparent that much of the terminology of biology has an unwarranted sex bias. The biology teacher who objectively considers the results of research on the physiologic and psychologic nature of sexuality is perforce challenged to incorporate these findings into the day-to-day encounters with young people.

At the heart of all of this is the constant need to examine traditional views. Following the basic procedures of the scientist, the biology teacher should endeavor to place information—even the information contained in the textbooks—within the perspective of time. Social pressures may force us to examine our bias, undertake new kinds of research, and perhaps readjust traditional concepts (and their expression in the technical vocabulary) to a closer approximation of the truth. Biology teachers do not have all the answers yet, but at least we are looking, revising, adjusting. How exciting it is, for all of us, to be able to participate in this beginning!

P.E.

References

1. Goy, R. W. 1966. Role of androgens in the establishment and regulation of behavioral sex differences in mammals. *Journal of Animal Science* 25: 21-36.
2. Harlow, H.F. 1965. Sexual behavior in the rhesus monkey. In *Sex and behavior*, ed. by F. A. Beach. John Wiley & Sons, New York. P. 234-265.
3. Harris, G. W. 1965. Hormones and sexual differentiation of the brain. In *Proceedings of the Second International Congress of Endocrinology*, London.
4. ________, and S. Levine. 1965. Sexual differentiation of the brain and its experimental control. *Journal of Physiology* 181: 379-400.
5. Levine, S., and R. F. Mullins. 1966. Hormonal influences on brain organization in infant rats. *Science* 152: 1585-1592.
6. Pfeiffer, C. A. 1936. Sexual differences of the hypophysis and their determination by the gonads. *American Journal of Anatomy* 58: 195-225.
7. Young, W. C., R. W. Goy, and C.H. Phoenix. 1964. Hormones and sexual behavior. *Science* 143: 212-218.

Talking Openly About Sex

Peter J. Snyder

Reprinted with permission from
THE SCIENCE TEACHER,
Volume 43, Number 1, January 1976.
Copyright by the
National Science Teachers Association
1742 Connecticut Avenue, NW
Washington, DC 20009

Distress about teenage promiscuity, unwanted pregnancies, and venereal disease has given rise to most high school sex education courses. Rarely, though, have these concerns found their way into resulting classes. Much of the information offered under the title of sex education is actually about reproduction. Well and good. But the attitudes and personal skills needed to build self-esteem and satisfying relationships with others will not come about by learning parts of the body or steps in embryonic development. Rather, we must deal with personal feelings, self-image, emotional and physical needs, and values. Students must be encouraged to explore these areas and to clarify their own values in an atmosphere of honesty and trust.

Values clarification relies on open communication and honesty. The aim is to encourage behavior in harmony with the individual's own system of values. Classroom discussion, aided by certain concrete strategies I will propose, helps students to more clearly define their own values. Comparing their feelings with those of their peers lends perspective to, and offers alternative means of coping with, their own social and sexual problems. They can, furthermore, identify issues about which they just haven't made up their minds.

It is highly desirable that the activities suggested in this article have the support and involvement of parents. Have your students try the exercises at home. If possible, run concurrent evening classes especially for parents. Students will quickly learn that problems related to sexuality are difficult even for adults, and that there is by no means a consensus of opinion on any of them.

Certain areas of sex education naturally lend themselves to values clarification, but they are often ignored in courses because of their sensitive nature. Here are several:

- Development of sexual self-image (childhood experiences, influence of parents, sexual curiosity)
- Adolescent problems (masturbation, menstruation, increase of sexual desires)
- Personal sexuality (feelings about the body, your peers, your fantasies)
- Ranges of sexual values (adolescent sex, alternative sexual mores, birth control, homosexuality, pornography)
- Sexual problems (impotence, frigidity, unwed mothers, illegitimate children, venereal diseases)
- Sex roles (masculinity and femininity, sexism, double standards)

I will suggest here five specific strategies for initiating classroom discussion on any one of these sensitive areas. The strategies are merely meant to get things going—focus the topic, involve the students, and start them thinking. Once discussion is underway, youngsters' own concerns will emerge. There are only two rules to follow in applying these strategies: *Be accepting of any response and give students the right to remain silent when they do not wish to respond.*

Strategy 1: Values Voting

Read a series of questions and ask students to take a position on each. Have students raise their hands for an affirmative response; thumbs down for a negative; and folded arms for undecided. After voting on the series of questions, students will be eager for discussion. The following items, for example, will generate interest in the area of sexual self-image.

How many of you:

- Wonder how attractive you are to members of the opposite sex?
- Would like to change your body?
- Are uncomfortable undressing in front of your friends?
- Are embarrassed when a zipper or button comes open?
- Have a best friend of the opposite sex?

Strategy 2: Rank Order

The teacher reads a question, then writes alternatives on the board, asking students to rank them. Encourage students to explain their reasoning. Then allow others to react.

Which do you think would be the worst discovery?

- that you have venereal disease
- that you are illegitimate
- that you are pregnant (or have got someone pregnant)

Which of these would you have the most trouble introducing to your friends?

- a homosexual
- a racially mixed couple
- a prostitute

Strategy 3: Values Whips

Read a question to the class and give them a few moments to think. Then whip around the room, choosing students to respond. Answers should be brief, and students may choose to pass.

- Do you wish you had a larger or a smaller family?
- Should people always do what they like?
- What do you think of a parent who hits his teenage son or daughter for masturbating?
- What kind of a job do you think is only for women?

Strategy 4: Alternative Action Search

Read one of the following situations. Tell the students to consider all their beliefs, feelings, and values in deciding what they would do. Each student should write a short response and then gather into a group of three or four for discussion. Groups should try to agree on one action as best. Limit discussion to 10-15 minutes.

- All your best friends are taunting a boy they suspect of being homosexual. You share their suspicions, but not their desire to make him unhappy. You try to divert the group to some other activity, but they start teasing you, too. What would you do?
- You just found out that you are pregnant (or have got your girl friend pregnant). What would you do?

Strategy 5: Character Evaluation

As an extra-credit project or in conjunction with an English teacher, ask students to read and analyze popular novels, plays, or films that portray teenage characters with sexual problems. Have them outline plots and themes, then discuss how they reacted to the characters and their situations. Ask them questions like these:

- Do you agree with the decisions the characters made? Why or why not?
- Would you have done the same?
- Are there alternatives that the characters did not consider?
- Did the characters make realistic decisions; did the author cop out with a happy ending? How would you have ended the story?

Books which lend themselves to use in this way are:

- *None of the Above.* Rosemary Wells. Dial Press, N.Y. 1975. (Deals with the problem of male impotence and one girl's decision between college and marriage.)
- *Mr. and Mrs. Bo Jo Jones.* Ann Head. New American Library, N.Y. 1968. (A perennial favorite of teens, this is the story of a couple that "has to get married.")
- *Trying Hard To Hear You.* Sandra Scoppettone. Harper and Row, Publishers, N.Y. 1974. (The problem of homosexuality; a young girl discovers that her best friend, Phil, and her boyfriend are in love with each other.)
- *Growing Up in a Hurry.* Winifred Madison. Little Brown and Co., Boston, Mass. 1973. (A teenage couple considers abortion as the solution to an unwanted pregnancy.)
- *VD: The ABC's.* John W. Grover, MD. Prentice-Hall, Inc., Englewood Cliffs, N.J. 1971. (Basically an information book: How not to get VD, what to do if you have it. Includes some case histories which could serve as basis for discussion.)
- *You Would If You Loved Me.* Nora Stirling. M. Evans and Co., N.Y. 1969. (The classic "Should I or shouldn't I?" plot, set in the midst of a political campaign.)

Answering Questions About Sex

William L. Yarber

"How safe are rubbers in preventing pregnancy?" "Will masturbating keep you from becoming a father?" "Why are gays often afraid to tell people who they are?" "Is it alright to have sex with your boyfriend, if you marry him later?" Not uncommon questions from adolescents wanting answers about sex. Often it is an assurance of normalcy that a young person seeks—or a simple request for information. Whatever the motivation, the response of the person to whom such questions are entrusted can either erase *or* exacerbate fears, misconceptions, even superstitions, about sex.

One thing is fairly certain: the "informant" is more likely to be a peer than a parent. For lots of reasons, parents and children are still largely unable to communicate about sex. It is only natural, then, that young people rely on friends for answers—though all too often these answers turn out to be distorted or incorrect.

Society is still bewildered about when and from whom its young people should learn the facts of life. Nonetheless, evidence indicates that American youngsters are sexually active. According to the Planned Parenthood Society, half of the 21 million teenagers in the U.S. have had intercourse before 19, and 20 percent of the nation's 13- to 14-year olds have had intercourse at least once.

Pregnancy is one obvious consequence. A Johns Hopkins study reported that three out of ten female teenagers who engage in premarital activity become pregnant. The results are often scarring: disruption of life plans, dropping out of school, possible welfare dependency, and higher medical risks for both mother and child. In 1974, according to statistics from Zero Population Growth, nearly 608,000 teenagers gave birth and an estimated 300,000 had abortions.

Most teenage pregnancies (perhaps 70 to 85 percent) are unplanned, often the result of ignorance and misinformation. Schools—especially with the backing of parents and community—can do much to help. By giving students the chance to discuss problems with qualified educators, schools can not only contribute to the moral and social development of youngsters, they can help to increase communication between students and parents, and encourage better sex-related decisions.

Excellent materials have been published recently to assist teachers in answering student questions about sex. These, as well as my own experience in conducting classes in human sexuality, form the basis for the following list of do's and don'ts.

Do's

1. *Do be prepared to talk about issues dealing with sexuality and interpersonal relationships.* Sex education is a delicate subject, and the success of any program will depend largely upon the qualities and skills of the classroom teacher. Therefore, educators involved in sex education should:

- Have a healthy attitude toward their own sexuality, and have developed a responsible sexual life style;
- Have respect and sensitivity for the values and feelings of youngsters;
- Be well-informed about human sexuality, through reading and participation in workshops or college courses;
- Be able to communicate warmly and effectively with youngsters, so that mutual trust and a supportive classroom climate are established;
- Formulate their own approach to stimulating classroom discussion, based on the needs and maturity of the students.

Reprinted with permission from
THE SCIENCE TEACHER,
Volume 44, Number 3, March 1977.
Copyright by the
National Science Teachers Association
1742 Connecticut Avenue, NW
Washington, DC 20009

2. *Do develop a relaxed, open, and comfortable classroom atmosphere.* Discussion is facilitated if students feel that the classroom is a "safe" environment where they may express their true feelings and opinions without fear of rejection or censure.

3. *Do respond as honestly and thoroughly as possible.* And don't get "hung up" on your own feelings of inadequacy and guilt. Make every effort to talk in terms of the students' needs rather than your own.

4. *Do take time to be sure you understand the question.* Sometimes questions can be interpreted too literally or narrowly. If you are not sure what a student means, say so. Say, for example, "I'm not sure I understand your question," or, "Please rephrase that so I can understand what you mean." Now and then, a question may catch you off-guard. Referring it back to the student ("What do you think?") will give you time to decide what approach to take.

5. *Do consider both male and female viewpoints.* This helps students acquire a healthier understanding of the opposite sex.

6. *Do help students understand and tolerate different ethical attitudes about sex, resulting from religion, family heritage, and environment.*

7. *Do assure students that past sexual behavior does not determine future behavior.* Students sometimes think that adolescent experiences (such as experimental sex play with the same sex) have inevitable consequences in adulthood. They need to understand the various types of behavior that sometimes occur during sexual development.

8. *Do encourage students to utilize correct scientific terminology.* Students often use slang words for sexual organs or behavior out of ignorance or embarrassment. Tactfully encourage them to use accurate terminology, both as a way of emphasizing the seriousness of the subject and to insure mutual understanding. When someone asks a question using slang, rephrase the question or answer it using the proper terms. Defining slang may also be important, so that each class member gives the word the same meaning. Also, make a point to be familiar with the local vernacular. Credibility will be lost if you must continually ask students for "translations."

9. *Do allow adequate time for discussion.* In-depth discussions of important questions take time; misconceptions only increase when topics are treated superficially. Feedback from students offers clues to whether more discussion is needed.

10. *Do provide a question box for unsigned questions.* In this way, students with particularly controversial or personally revealing questions can remain anonymous. Assure students that every question will be given consideration, but that you may refuse to answer any that are in poor taste.

Don'ts

1. *Don't dominate the discussion.* Whenever possible, involve class members in answering questions. The older the students, the more inclined they are to participate. In fact, many students discover that open discussion is the most meaningful aspect of sex education.

2. *Don't relinquish your adult role.* Your age and maturity will allow you to add perspectives and considerations that students might overlook—for example, society's reaction to certain behaviors or attitudes.

3. *Don't "interrogate" students.* There is a difference between a teacher who "grills" class members about their feelings and one who facilitates interaction. Also, students must be secure in their right to remain silent.

4. *Don't impose your own value system.* Your background and beliefs may tempt you to interject your own value system, but resist! Certainly there will be questions about moral or social aspects of sex which call for more than a factual answer. When this is the case, be careful to present as many viewpoints as possible.

5. *Don't feel that you must give your opinion.* At one time or another, students will probably ask what you think—and your first impulse may be to respond. But teachers should take care in stating their feelings, particularly if these differ from community standards. Try referring the question back to the students. If they persist, and if it seems appropriate to you, give your opinion only *after* students have discussed several sides to the issue. Of course, you may always refuse to answer the question, saying: "I don't feel it is appropriate for me to give my opinion—it may influence your feelings. I want you to draw your own conclusions." It is your right to refrain from answering questions, just as it is the students'.

6. *Don't discuss your own sexual behavior, nor ask students to reveal theirs.* Occasionally, students may ask you personal questions—for example, do you or your spouse use birth control. Here again, it is perfectly acceptable to refuse to answer by saying, "It is not the purpose of this course to learn about each other's sexual behavior. I won't ask you about your practices, and I don't think it fair to ask me. A person's sexual behavior is too personal to discuss in class."

7. *Don't allow student nervousness or uneasiness to end discussion.* Some students who have never talked about sex in a school setting may become nervous and embarrassed during discussions. Let students know that you appreciate how they feel, and that sex is a proper topic for discussion because sexuality is a respectable and important aspect of life. Students may test you at the beginning with a sensitive question. And they will soon sense if you are uneasy. If you are natural and matter of fact, this will help students to be more mature and comfortable.

8. *Don't try to pre-determine the types of questions that will be asked.* You may be surprised, in fact, by the frankness of the questions. Because a teacher who over-anticipates is often thrown off-guard by the unexpected, it is better to be prepared for a wide range of questions. Secondary students are as likely as younger ones to ask questions about the most fundamental aspects of sexuality—it is easy to overestimate the knowledge of our students in this area. On the other hand, students sometimes come up with quite sophisticated questions.

Every school should provide settings for students to ask questions about human sexuality and interpersonal relationships. Answering questions and guiding discussions about sex can be frustrating and difficult, but when done well and with proper preparation, it can be a most rewarding teaching experience.

References

1. Schulz, Esther D. and Sally R. Williams. *Family Life and Sex Education: Curriculum and Instruction.* Harcourt, Brace and World, Inc., New York, N.Y. 1969, pp. 25-26.
2. "Teenage Pregnancy: A Major Problem for Minors." Zero Population Growth, Washington, D.C.
3. *The Professional Training and Preparation of Sex Educators.* American Association of Sex Educators and Counselors, Washington, D.C. 1972, p.3.
4. *The Effective Teacher: Family Life and Sex Education.* Guidance Associates, New York, N.Y. 1970.
5. Uslander, Arlene and Caroline Weiss. *Dealing with Questions about Sex.* Learning Handbooks. Palo Alto, Calif. 1975.

Sex and Society: Teaching the Connection

Peggy Brick

Reprinted with permission from
THE JOURNAL OF SCHOOL HEALTH,
Volume 51, Number 4, April 1981.
Copyright by the
American School Health Association
Kent, Ohio 44240

Adolescents are struggling to survive in an exploitative, sexual milieu. They deserve an education in human sexuality that will help them understand themselves and their society. They need to learn how to cope with the pressures created by conflicting sexual norms and the deliberately provocative media.

It is possible to imagine a hypothetical and ideal society where schools would not need to teach about sex. Children would all be reared by loving, nurturing parents. They would learn about sex informally from adults who are comfortable with their own sexuality and who are able to communicate freely. The entire social environment would engender caring, responsible, non-exploitative human relationships.

But ours clearly is not such a society, and a comprehensive education in sexuality is desperately needed by American teenagers. Even where sex education has been accepted into school curriculum, nervous administrators often relegate it to a segregated course featuring the biological facts, a one-shot Planned Parenthood demonstration on contraceptives and a VD horror film. Seldom does sex education mean integrating sexuality into the regular academic curriculum and presenting it from psychological, sociological, anthropological and ethical as well as biological perspectives. Yet knowledge and insights from all of these disciplines are necessary for adolescents to understand their own sexuality and begin to develop sexual autonomy and responsibility.

For the past ten years, I have had the opportunity to teach a unit on sexuality as part of a full-year behavioral science course that encourages students to gain a broad perspective on sex in society as well as a deeper understanding of their own feelings, behaviors, relationships and values. The human sexual behavior unit has evolved into an eight-week segment given at the end of the year so discussions of sexuality are enriched by earlier units on human relations, the life cycle, issues in American society and mental health. Student demand for the unit is one important reason behavioral science attracts over 200 students a year in a school of 1280 students. Human sexuality has become accepted as a fundamental part of the curriculum in the social studies department of our school, where it has legitimacy as a proper and integral part of the study of human behavior.

The unit has received little resistance and considerable support from parents. There are probably several reasons why my very direct approach to sex has been accepted by both the school and community. First, the curriculum has been developed as naturally and with as little fanfare as any other topic appropriate to the course. Second, the course is an elective. Third, since this is a multi-ethnic community, proud of its progressive tradition, the majority of people who choose to live here have liberal values, including that of academic freedom. Fourth, whenever possible, the value of this multi-dimensional approach is explained to parents.

The course was designed both to help students see the ills of our society—that it is sexist, sexually provocative and stimulating and provides few guidelines for developing healthy sexuality—and to help them grow individually on three levels: general knowledge about sex, self awareness and social consciousness. The curriculum is presented in six stages:

I. Introduction to Human Sexual Behavior

The introduction establishes a broad definition of sexuality, answers questions students raise about sex, dispels major sexual myths and provides a foundation of knowledge. Throughout the unit, a "sex question box" is perched conspicuously on my desk; and students are invited to submit any questions they feel uncomfortable asking in front of the class. I also distribute a 70-question Sex Knowledge Test* and give students two days to find the answers using any reliable source. Before we discuss the answers to the test, the film "About Sex"[1] is shown because it provides a good model for adolescents discussing sex comfortably with a facilitator. Students also read "Ten Heavy Facts About Sex,"[2] which is useful in teaching recognition of the sexual "messages" most writing imparts. Students are asked whether the book would be good for teaching middle school students about sex, which of the "facts" are controversial, what values are promulgated by the author and where they agree or disagree with him.

During this introductory stage, we continue to use two techniques familiar to students from earlier units: personal journals for self awareness exercises and questionnaire surveys for gathering anonymous data about the class. For example, students may use their journals to describe, non-judgmentally, how they feel right now about their own sexuality, listing 10 "stepping stones"[3] or memorable events that led them to their present situation. These descriptions may or may not be shared with the class. Data gathering includes a "First Knowledge of Sex" questionnaire: Who first told you about sex? How old were you? What did they say? How did you feel? How adequate and complete was the information you received? Results may be listed on the board, or students may analyze them and report to the class.

II. An Anthropological Perspective

One of my most important discoveries as a sex educator has been that an anthropological approach provides an excellent framework for the examination of American mores. I start with a lecture/discussion using Margaret Mead's findings about the importance of early child-rearing practices for adult sexuality as seen in the Mundugmor, Arapesh, Manus and Balinese.[4] Then a film such as "Rock-a-Bye-Baby"[5] which emphasizes the vital importance of early body contact for normal development is shown. Finally, after reading *Sexuality—Two Anthropological Studies: Too Much in Mangaia and the Lack of the Irish,*[6-7] the class analyzes each society's methods of social control, sexual norms, sex role expectations, attitudes toward pregnancy and childbirth, masturbation, menstruation, premarital sex, intercourse and marriage. As participant-observers in American society, the students later attempt to describe American sexual mores.

Using these three societies as examples, students make and discuss hypotheses about human sexual behavior, e.g.: The importance of sex varies among different groups of people. Your attitude about sex is almost completely determined by your parents and society. If an individual's sexual activities are different from the social norms, they are considered deviant and unacceptable. The way society expects people to act sexually is probably the way they will act. Men tend to have more privileges than women. Sex is not always enjoyed by both partners. Marriage is universal and is for the purpose of assuring a father and a mother for the rearing of children.

Discussion of such hypotheses leads to consideration of the difference between animal and human behavior. Students begin to understand that animal behavior is controlled by instinct and human behavior in traditional societies is controlled by well-defined norms. In contrast, as young people living in modern American society, they are confronted with a profusion of contradictory sexual expectations that require information and thoughtful decision making.

III. Gender Development and Sex Role Socialization

Since attitudes toward maleness and femaleness are at the center of sexuality, it is important that adolescents become aware of influences on their own gender identities and sex role expectations. This section can be started with great hilarity as students call out words to complete phrases on the blackboard: Girls are . . . Boys are . . . This is followed by a lecture on "Boys, Girls, What's the Difference Really" using Money and Ehrhardts' work on prenatal development[8] and Maccoby and Jacklin's[9] summary of research on sex differences.

With this background, the students return to their journals and answer these questions: What is your earliest memory of being treated differently because you are a boy/girl? In your home, what is expected of girls/boys? In elementary school, what did boys/girls get to do that you didn't get to do? Who are the three people of your own sex that you most admire? Students discuss their entries in dyads; some share an experience with the entire class. The following day, the class is divided into six groups, each with a magic marker and a sheet of newsprint headed by one of the following: Advantages of being female; Advantages of being male; Disadvantages of being female; Disadvantages of being male; Advantages of sex role scripting. The entire class discusses the completed lists. Next, students either view the slide show "Dick and Jane as Victims,"[10-12] which demonstrates sex role stereotyping in elementary textbooks, or they do their own content analysis of textbooks gathered from district elementary schools. Either way, students are shocked—even angered—by the sexism apparent in even the most recent texts.

Our examination of sexism continues with a combination of consciousness-raising activities that has a profound effect on many students. After viewing "Killing us Softly,"[13] a film that shows how advertising reduces women (and sometimes men) to sex objects, students are asked to select magazine ads and analyze their sex messages. Students are also asked to observe TV shows and ads and ask themselves: What are women doing? Men? How do they relate to each other? What are the messages about being male or female you get from the show? Is it sexist? Enthusiastic media sleuths, the students eagerly report their daily discoveries of sexism and sex exploitation.

I emphasize the importance of sex-role stereotyping because I believe it is central to problems of adolescent sexuality. Neither boys acting out a version of macho man nor girls seduced by languid models submissively poised to attract men are learning to relate to members of the opposite sex as whole persons. Nor are they exploring their own full human potential. I try to help them see this.

---

*I have developed this version of the test over many years, but many of the basic items come from the Sex Knowledge and Attitude Test (SKAT) by H. I. Lief and D. M. Reed, Center for the Study of Sex Education in Medicine, Philadelphia.

IV. Adolescent Sexuality

By this time in the course, the classroom has developed a reputation. Diagrams of genitals, contraceptive devices, eggs on their way to the uterus, photos of babies in utero and provocative magazine ads bedeck the walls. To focus more sharply on the adolescents themselves, we begin by adding common seduction "lines" submitted by the students to our wall collection. "Everybody's doing it." "I *need* you." "If you knew how much this means to me." "Just this once." "Who will know?" "Why are you so up-tight?" "Prove you love me."[14] Ingeniously, sometimes raucously, students try different ways of saying no in response to each line.

Next students read a summary article on Robert Sorenson's *Adolescent Sexuality in Contemporary America.*[15] As we discuss Sorenson's findings, we carefully note the serious bias in his sample which was made up of students whose parents gave permission for them to take the questionnaire. Even this sample demonstrates that, contrary to the worried assumptions of some students, everyone is NOT doing it; in fact, it's perfectly *normal* to choose not to have intercourse.

What is or is not *normal* is a major concern of many students. They have an opportunity to discuss this and other concerns by completing a "Sex Concerns List" of 45 items* and indicating whether each item was a concern in the past, is still a concern or was never a concern. As data from the list is compiled each year, it becomes obvious that many of the concerns of boys and girls are mutual; and they are not about lack of sexual knowledge or personal qualities, but rather their ability to establish meaningful relationships. Both want to know how they can tell when someone really loves them and how to avoid rejection. As anyone who works with adolescents knows (and as students themselves readily admit), they are desperate for acceptance. In a sex-oriented society, this puts them under tremendous pressure from their peers. Enlightened sex education may help them understand and resist this pressure.

For many, an article, "Some Facts About School-Age Parenthood,"[16] makes real the dangers of early pregnancy for the baby, mother and father. In discussion following the reading, students demonstrate a keen understanding of the psychology of unwanted pregnancy, listing as many reasons for adolescent pregnancies as the experts. Often their reasoning is not hypothetical, but personal. "A girl may be afraid she'll lose a boy if she doesn't have sex with him." "Some boys don't like a condom." "Maybe they're rebelling against their parents." Additional articles[17] further student awareness that unwanted pregnancy may result as much from attitudes toward sex as from ignorance about contraception.

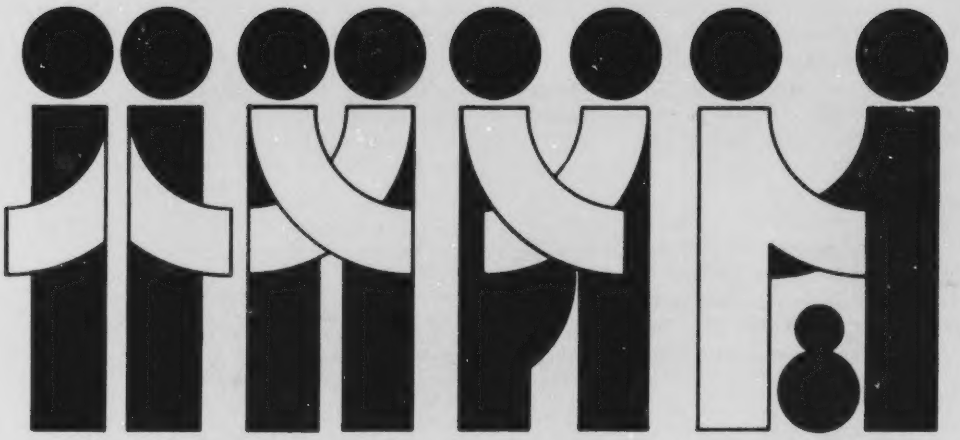
Next we view a film, "To Plan Your Family,"[18] designed to encourage women with large families to use birth control. Although somewhat outdated, it combines clear graphics with commentary by women who use various contraceptive methods and seems especially effective with adolescents just because it is not giving them advice. I follow the film with a "chalk-talk" illustrating birth control techniques and a variety of pamphlets,[19-20] but such information giving does not get to the core of the problem for sexually active teens, many of whom are unable to communicate with a partner about contraception. This year, to supplement other approaches, I initiated a simulation in which students are divided at random into pairs and given descriptions of situations in which a couple wants to avoid a pregnancy. The student pairs pretend to be each couple in turn and decide which contraceptive method best suits their situation. They record their choice, their reason for that choice and, most important, the steps they would need to take in order to implement their decision. Students imagine themselves as a 40-year-old married couple who have two children and don't want any more; a 14-year-old couple who are considering their first sexual experience (almost all students decide that, in this case, abstinence is best); and a young married couple who want to wait several years before starting a family. The exercise provides an excellent check on how well students understand the pros and cons of each method. It also provides a model for communicating about contraception.

Our local Teen Life Theater has been a valuable resource in helping students consider alternative ways of responding to personal crises. Members of the Teen Life troupe portray dilemmas common to adolescents and then let the audience challenge their behavior while they remain "in character." Students tend to identify with some of the characters; and as they watch the scenes, they struggle to find solutions they think are satisfactory. These theater techniques give self insight, provide new options and demonstrate effective problem-solving, at the same time showing students how they can experiment with alternative behaviors for themselves through role play.[22-24]

Observation of the theater helps prepare students for role play in the classroom. In order to avoid domination by the most vocal students, I begin role play by dividing students into groups of four or five and give each group a list of problem situations they are to resolve by group consensus. Then they select one to act out for the entire class. In this way, all students take part; and since students watching have already discussed each problem, they are eager to compare their solution with others. Typical situations might be: Your younger brother, a fifth grader, comes to you and asks what *really* happens when a man and woman have sex. (Students find this one very difficult and sometimes cop out by sending brother off to ask mom or dad. Some gain appreciation for their own parents' inability to discuss sex comfortably with them.) Your eighth-grade sister has been dating a ninth grader for several months. You come home from school early and discover she is in the bedroom with the boy. (Students often jump to conclusions about what's going on. Protective of their sister, they may begin to understand some of their parents' responses in similar situations.) A 16-year-old boy comes home and is confronted by his mother, who found a box of condoms in his jeans when she was washing them. (Students love this one. They relish explaining to "mother" how they are being responsible by using birth control.) Finally, a girl of 16 just had a test at Planned Parenthood and discovered she's pregnant. (She usually tells her boyfriend first; and more often than not, he turns out to be a scoundrel—an interesting commentary on student perceptions of the responsibility of adolescent boys.) These scenes are supplemented by others throughout the unit which the students suggest themselves.

---

*Adapted from a "What is Normal Checklist" developed by Lester A. Kirkendal.



P.E.

V. Values and Relationships

The importance of values in sexual relationships has been apparent throughout the unit; but at this point, we turn to more explicit consideration of values. We begin by reading a controversial article, "A Physician's View of College Sex,"[25] which describes the differences in expectations of men and women in relationships as the writer perceived them at a large university. He claims that, while the majority of women hope to marry their partner, only 12% of the men have the same hope. Students are then asked to write a "Letter to the Editor" and key comments are distributed to the class. Each student takes the list of comments and checks, once to indicate agreement and twice to indicate strong agreement. Then we discuss as a class.

"I disagree with what he said about men caring more about sex and less about a relationship." "Women are not the only 'sex objects'." "I've found that men often expect a meaningful relationship but when let down don't show their feelings because they want to stay in the American male role." "Today's youth take sex much too lightly without any serious meaning." "To me, making love is something beautiful and deeply meaningful which can only be fully enjoyed and shared when strong feelings of love go with it." "Sex has become a kick, a fad that you must partake in if you want to be accepted and 'cool'."

This leads to further exploration of the current sexual scene in the U.S. We list what seem to be "traditional" American sexual values and, next to them, we struggle to identify the values operating now. Students are quick to note the lack of any consistent sexual morality in the U.S. today. They remark on differences among groups and decry hypocrisy. "Why do adults tell us to do one thing when they're doing another?" "My parents don't take me seriously when I tell them I'm in love." "What if you want to wait until you're married?"

Since society offers no firm guidelines for responsible sexual behavior, students are invited to create their own. They meet in two sex-segregated groups to list the standards they would include in a "Code of Sexual Behavior." I ditto the two lists; and the next day students divide into smaller sex-integrated groups to see if they can reach consensus on the items. The entire class works to resolve any continuing differences. A recent code includes, among others, the following recommendations:

- formal sex education in the schools
- no double standard in sexual conduct for men and women
- encouragement for both males and females to be proud of their bodies; discouragement of stereotypes and the "ideal body"
- sex always a matter of choice; no pressuring of another person to have sex
- full and honest communication between partners
- caring relationships

As students discuss such standards, it is clear they do not find them operating in their high school environment. Year after year, questions and comments reveal that, for many, the new sexual "freedom" is a kind of tyranny.

VI. Looking Toward the Future

In the final days of the unit, students are encouraged to gain perspective on their current lives by examining their expectations for the future and by discussing social issues that will affect them. For example, an "Attitude toward Women" survey reveals how closely students expect to conform to traditional male/female roles. For several years, girls have scored markedly less traditional, more "androgynous" than boys. Students discuss these differences and consider their implications for relationships between the sexes.

Speakers, debates, surveys, readings, films and journal entries all enrich our study of alternative lifestyles, the Equal Rights Amendment, abortion, prostitution and pornography. Students are especially eager to discuss homosexuality. To dramatize how much misinformation exists on the subject, students take a pretest and then read basic facts about homosexuality, correcting their answers as they proceed. This is effective and stimulates meaningful questions on a topic of great concern.

Although I am able to make students aware of their homophobia, I doubt I succeed in reducing the distress of those students who are in the process of dealing with their own homosexuality.

I often conclude the unit with an essay assignment that encourages students to reflect on the kind of parenting that leads to healthy sexuality: Imagine that someday you have a child of your own. What would be your approach to his/her sex education? At what age would sex education begin? What would be the most important messages about sexuality you would want to give your child? How would you respond to the child's questions? What kind of information would you want the child to have at each age? How would you try to help your child develop a healthy attitude toward sex?

Throughout this unit, there is never any doubt that our study of sexuality is of vital importance to virtually every student. The atmosphere is spirited and we laugh often; but underneath, there is an intense, almost desperate seriousness as students search for ways to gain control over their lives. Anyone who opposes sex education must be out of touch with the consuming need adolescents have to understand themselves and their society. If school systems continue to capitulate to the anti-sex forces, they abandon their students to the status quo of premature sexual experiences, venereal disease, pregnancy, abortion, thwarted lives. Sex education is no panacea, but it is the very least we can do for young people faced with the realities of the current American sexual scene.

Notes

1. *About Sex*, Texture Films, 1600 Broadway, New York.
2. Gordon, S.: *Ten Heavy Facts About Sex*. Fayetteville, NY, Edu-U Press, 1975.
3. Stepping stones, in Progoff, I.: *At a Journal Workshop*. New York, Dialogue House Library, 1975.
4. Mead, M.: *Male and Female*. New York, William Morrow & Co, 1967.
5. *Rock-a-Bye Baby*, a film from Audio Visual Center, Indiana University, Bloomington, Ind, 1956.
6. Messenger, J.C.: Sexuality: Two anthropological studies, the lack of the Irish. *Psychology Today*, February 1971.
7. Marshall, D.S.: Sexuality: Two anthropological studies, too much in Mangaia. *Psychology Today*, February 1971.
8. Money, J. and Ehrhardt, A.A.: *Man & Woman, Boy & Girl*. Baltimore, Johns Hopkins Press, 1972.
9. Maccoby, E.E. and Jacklin, C.N.: *The Psychology of Sex Differences*. Stanford, Calif, Stanford University Press, 1974.
10. Women on words and images. *Dick and Jane as Victims; Sex Stereotyping in Children's Readers*. Princeton, NY, 1975.
11. Carney, C. and McMahon, S.L. (eds): *Exploring Contemporary Male/Female Roles: A Facilitator's Guide*. LaJolla, Calif. University Associates, Inc. 1977.
12. Stanford, B. and Stanford, G.: *Roles & Relationships: A Practical Guide to Teaching About Masculinity and Femininity*. New York, Bantam, 1976.
13. *Killing Us Softly: Advertising's Image of Women*, a film from Cambridge Documentary Films, Inc., Cambridge, Mass.
14. Gordon, S.: *You Would If You Love Me*. New York, Bantam Books, 1979.
15. Sorenson, R.C.: *Adolescent Sexuality in Contemporary America*. New York, World, 1973.
16. Ney, F.I.: School-age parenthood, consequences for babies, mothers, fathers, grandparents and others. *Washington State Univer Cooperative Exten Bulletin*, April 1976.
17. Byrne, D. A Pregnant Pause in the Sexual Revolution. *Psychology Today*, July 1977.
18. *To Plan Your Family*, a film from Churchill Films, Los Angeles, 1971.
19. *Choices*, a pamphlet from Rocky Mountain Planned Parenthood Publications, Denver, 1980.
20. *Changes: You and Your Body*, a pamphlet from Choice, 1501 Cherry Street, Philadelphia, 1980.
21. *Part of Our Lives*, a pamphlet from Origins, Inc., 169 Boston Street, Salem, Mass. 1977.
22. Chesler, M. and Fox, R.: *Role Playing Methods in the Classroom*. Chicago, Science Research Associates, 1966.
23. Hawley, R.C.: *Value Exploration through Role Playing*. New York, Hart, 1975.
24. Zeleny, L.D. *How to Use Sociodrama*. Washington, DC, National Council for the Social Studies, 1964.
25. Collins, R.J.: A physician's view of college sex. *JAMA*, April 28, 1975.

APPENDIX

Independent Projects in Human Sexual Behavior
Project plan due:
Written report due:
Class presentation:

Be sure to select a topic of real interest to you. Below are listed some suggestions to get you thinking. If you have ideas of your own, develop a plan and have it approved.

Interviews:

1. With the executive director of Planned Parenthood. What are the organization's services? Whom does it serve? What are recent trends?
2. With an orthodox, reformed and conservative Jewish Rabbi for differing Jewish positions on abortion.
3. With a school counselor or social worker about pregnancies at the high school and how they are handled.
4. With an older person—perhaps your grandmother—on expectations for boys and girls in their family when they were young or about their attitude toward women's liberation and equal rights.

Observations:

1. Observe a kindergarten class to see the differences (if any) in the activities of the boys and girls; or observe the differences (if any) in how the teacher treats the boys and girls.
2. Compare the participation rate of boys and girls in a high school math class.
3. Observe a family with children of similar ages and note differences in parents' treatment of boys and girls.

Content Analysis:

1. Analyze the sex role stereotypes in a number of elementary text books used by your school system. For example, record the adult roles shown for males and for females, activities of boys and of girls, the number of pictures of boys and girls.
2. Analyze 10 commercials on TV. What are men doing? What are women doing? How do they treat each other?
3. Analyze the *Reader's Guide to Periodical Literature* listings in one specific month, say March, at ten-year intervals, say 1935, 45, 55, 65 and 75, to see how treatment of a topic has changed (homosexuality, masturbation, birth control). Note not only titles, but also number of articles written.

Wall Charts or Posters:

1. Diagram of male and female sex organs; differentiation of the genitals in the fetus.
2. Chart the birth rate of teenagers in the US compared to other countries.
3. Chart the average number of children in US families in 1580, 1680, 1780, 1880 and 1980.
4. Diagram major birth control devices with notation of pros and cons of each.

Speakers:

1. Plan to get a speaker (or several for a panel) on an issue of special interest. You must brief the speaker ahead, introduce the speaker, conduct class discussion following the presentation. Suggested topics: abortion, homosexuality, sexual morality, prostitution, pornography, Equal Rights Amendment, sex and the law.

Questionnaire-Survey:

In any survey, you are attempting to discover the attitudes of a certain group about a particular topic. You may want to compare attitudes of two groups, for example, males and females, freshmen and seniors, adolescents and parents. What are people's attitudes on controversial issues (premarital sex, working mothers, group sex, sex education in the schools)? What are the major questions adolescents have about sex? What are people's attitudes about different types of birth control? How many children, if any, do adolescents want? What person(s) do boys most admire? Girls?

Interview-Survey:

1. Interview a group of kindergarten children to find out what they want to be when they grow up.
2. Ask young children questions about "What do mommies do? What do daddies do?"
3. Ask teachers to compare the performance of girls and boys in their classes. You can compare grade levels, subject areas, etc.

Experiment:

1. Take young children one at a time and present a "boy's toy" and a "girl's toy." Record responses including comments.
2. Repeat Kenneth Clark's "brown dolls, white dolls" but use a boy doll and a girl doll. Compare children's attitudes toward dolls in response to appropriate questions (Which doll do you like best?).
3. Have elementary school children draw pictures of their dreams. Compare content.

NOTE: Remember, when doing your own research, follow this form:

1. Research question
2. Hypothesis
3. Procedure including sampling techniques
4. Results in written and table format
5. Conclusion including suggestions for further research

Mini-paper

Use at least three references excluding encyclopedias.

The History of Prostitution
The Fight for Birth Control
Teenage Pregnancies in the US
Control of Pornography
Supreme Court Decisions on Abortion
The Battle Over Sex Education
Equal Rights Amendment
New Ideas About Childbirth

Read a Book:

Select from many in the resource list in this special issue and get approval.

ISSUES IN SEX EDUCATION

Deciding how and what to teach about sex won't answer every question or inhibit new ones from arising. In this way, a curriculum resembles a scientific experiment and can be approached with the same open-mindedness and flexibility. Certain sex-related subjects, however, surface time after time and might be best anticipated with a grounding in their technical aspects and information on their current status.

Here are presented issues of human sexuality as diverse as the people confronting them. Preparations for sex and consequences of sex; sexual identities and alternative sexualities; societal implications of personal sexual considerations—each is touched on from a perspective (in some cases, more than one) that invites further investigation and resists facile resolution.

Collectively, these articles represent a smattering of only the most salient sex-related issues challenging ourselves and our students today. They are meant to be suggestive, not exhaustive, in the ground they cover, and they are included here not to threaten the integrity of an established syllabus but to strengthen the information base upon which such a syllabus is drawn.

Primary or Secondary Prevention of Adolescent Pregnancies?

James F. Jekel, MD

Reprinted with permission from
THE JOURNAL OF SCHOOL HEALTH,
Volume 47, Number 8, October 1977.
Copyright by the
American School Health Association
Kent, Ohio 44240

It is an appropriate time to reconsider the importance of prevention in health because study after study appears showing less than spectacular resulting benefits from therapeutic health services. Indeed, health, education, and welfare services are being subjected to increasing attack because they are showing signs of collapse in the face of modern demands. In the educational system, urban and rural youth graduate from high school (or drop out), functionally illiterate. The welfare system, instead of supporting families, forces them to break up, and the system is misused by thousands who do not qualify. The health system has failed to keep up organizationally, financially, and educationally with the impact of technology and specialization. In the health field, lip service is paid to quality and continuous, comprehensive, preventive care, but effective examples of these generalizations are difficult to find at a level of study larger than an unusually astute and dedicated individual practitioner.

There are few groups in the population with more needs than young women under 18 years of age, who are still in high or junior high school and are pregnant or have already become mothers. There were slightly more than 250,000 such women in 1973.[1] These young mothers suffer educational and social discrimination, often to the point of ostracism, with the combined effect of poor health for mother and child, educational and economic deprivation, unsatisfactory social and marital lives, and evidence of maternal deprivation (or worse) in the children.

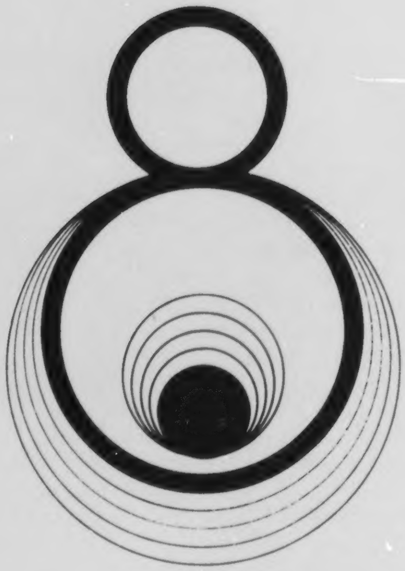
In the middle and late 1960s there was considerable optimism that community attitudes were changing, and that special programs of services to these women, coupled with improved availability of contraception and family life education, would reduce subsequent pregnancies to those already young mothers and would even reduce the rate of young women getting pregnant. This optimism has been replaced in the 1970s by discouragement as the numbers of school age parents have appeared to rise, programs for school age parents are overfilled, and "repeaters" are seen all too often.

These impressions from program people are not in error. Between 1968 and 1973 the number of births to women under 18 increased from 203,000 to 251,000 per year (a 24% increase in 5 years.)[1] This was due to the greater number of teenagers, but the change in age-specific pregnancy rates was also disappointing. The 15-19 year age group did have a 9% decrease in birth rate from 1968-1973, but this was a far smaller decrease than that for any of the older age groups (e.g., the 20-24 year age group had a 28% decrease in the same period). Moreover, the 10-14 year age group showed a 30% increase in age-specific birth rates in the same period of time.

This has led to an increasing cry from those working with school age mothers for "primary prevention," i.e., finding ways to keep girls less than 18 years of age from becoming pregnant. There are, however, theoretical, practical, and cost benefit reasons to question heavy dependence at this time on "primary prevention" of school age pregnancy.

Theoretical Problems With Primary Prevention

The term "primary prevention" was originated, or at least popularized, in medical circles by Dr. Hugh Leavell, who described three "levels" of prevention (Leavell's levels!).[2] The term was applied to the prevention of disease. First one must ask



P.E.

whether the medical (disease based) model itself is appropriate to apply to early pregnancy. Is this reminiscent of an old era when pregnancy was an "illness"? According to Talcott Parsons, to be socially tolerable, illness, which otherwise is a form of deviance, must be nondeliberate in origin, and the afflicted individual must want to rid herself of the illness and seek competent help to do so. Society, in turn, exempts the person from responsibiliity for his or her condition, and the person is relieved of normal role obligations. As McKinlay has pointed out,[3] it is dubious that any of these four aspects of the Parsonian "sick role" apply very well to pregnancy, which is often wanted, and the help that is sought is to maintain and improve the pregnancy. Moreover, society does hold the woman responsible for the existence of her pregnancy and does not exempt her from most obligations. The exceptions to the latter are if there are serious complications of the pregnancy (where the concept of illness is easier to accept) or, ironically, in some areas pregnant adolescents are more than exempted from normal role obligations such as school—they are ostracized! MacGregor has emphasized the biological and social disadvantages of treating pregnancy as an illness.[4] In fairness, it should be noted that there are still some who believe pregnancy should be considered a chronic illness.[5]

Even if the medical model is useful (and that is dubious), one must distinguish between a disease and a symptom or complication of a disease. Is school age pregnancy a disease to be prevented, or is it a symptom of some other problem? There is evidence to suggest that many of these pregnancies are wanted, either because the young woman finds something she needs in closeness with a man or because she believes she can make up for lack of love in her own upbringing by having a child whom she will love and who, in turn, will love her.[6] Some persons working with young mothers feel many pregnancies are an attempt by the young mother to ward off an impending depression or intolerable loneliness.[6] If the pregnancy is not the disease but is a symptom or attempt to solve a problem, there is the danger that preventing one symptom may lead to another. What will take its place: drugs, alcohol, violence, suicide? Are they to be preferred if, indeed, this is the choice? Adolescent mothers already have an inordinately high suicide risk.[7] Is enough known about the adolescent cultures to promote "primary prevention"? What does this concept mean to adolescents?

Assuming that Leavell's model does have usefulness, primary prevention means preventing the development of the problem first. This may be done in one of two ways:

1. Health promotion. By this Leavell means using general methods of environmental and behavioral change, including good nutrition, sanitation, housing, and education. There seems to be little doubt, since school age pregnancy has a strong socioeconomic gradient, that general social measures, if applied over generations, would have an impact on adolescent fertility, but these changes are not likely to be within the power of a specific "program" to achieve. Klerman,[8] for example, has emphasized the critical need to provide, early, a meaningful role for young people, including some form of socially useful work and skills, preferably integrated with their educational experiences. Programs for family life education also fit in this category of "health promotion."

2. Specific Protection. The second subheading under primary prevention is "specific protection," i.e., a technically developed "bullet," an intervention with the capability of preventing a specific disease. The prototype in medicine is the vaccine. Are there specific techniques that can be used to prevent first pregnancies in teenagers? Contraceptives will prevent pregnancies, and abortions will prevent live births. But in what context can these be offered to young adolescents and to what extent should they be promoted?

Secondary Prevention

Leavell's second level of prevention is detecting the problem early and limiting the disability caused by the problem through effective therapy.

The increasing number of special, often comprehensive, school age parent programs, which are developing around the country (now over 750), are considered secondary prevention. They attempt to limit the medical, social, and educational disability from the school age pregnancy. It must be remembered also that secondary prevention, in the form of effective family planning assistance, may be primary prevention of a rapid subsequent pregnancy, which is especially important for medical reasons.

Ordinarily, in disease, primary prevention is considered more effective and efficient if it can be achieved, but secondary prevention is often the path of least resistance due to demand for services and clarity of the target population. Is this true for school age pregnancy? Is primary prevention more effective and efficient?

Problems With Primary Prevention Of School Age Parents

There are three major types of primary prevention programs advocated to reduce the numbers of first school age pregnancies. Each of these has problems at the present time.

Family Life and Sex Education

Many believe that an effective curriculum of family life and sex education in the schools would help teenagers understand the consequences of their actions and, if they must be sexually active, at least be more knowledgeable in the use of contraceptive methods. There are several problems with this belief.

First, the author knows of no effective demonstration that family life and sex education programs have a demonstrable demographic impact. Only Sweden has had long term experience with providing sex education for young people, and "the effects of (this) program on sexual behavior and use of fertility control are not clear."[9] In any case, they would be more likely to be effective if there also was good access to family planning assistance and devices.

Second, in the current social atmosphere, it is unlikely that the majority of communities and school systems will permit an effective family life and sex education program in the near future. What needs to be done first is to establish demonstration programs and determine their effects on fertility and other variables.

Family Planning

There have been attempts to create programs to give sexually active teenagers family planning devices and information.[10] The Mt. Sinai program in Baltimore contained an evaluation of subsequent reproductive performance, which, although lacking a control group, did not show any definite reduction of pregnancies because of the program.[11, 12] Drop out rates were high, and among those remaining in the program there was still a moderate pregnancy rate (6 per 100 person-years).

Some persons have questioned the likelihood that school age women, particularly those from low income and limited educational backgrounds, will make effective use of contraceptive methods.[13,15] In one study, school attendance, not contraceptive use, was the strongest predictor of reproductive performance.[15]

There is a problem with contraceptive programs that concerns the target group. As in many areas of public health, those at highest risk are least likely to use the services. In an evaluation of a teenage family planning program in one medium sized New England city, Feinberg[16] found that almost all the teenagers who used the family planning services came from the surrounding suburbs, and few users came from the inner city target group.

Another problem complicates the provision of contraceptive services for teenagers. In the past the legal rights of minors to seek contraception, abortion, or treatment for venereal disease without parental consent have been questioned. By 1976, 45 states had reduced the age of majority to 18 years; 44 states permitted an 18-year-old to seek her own medical care, almost always including prenatal care and abortion.[17] Nevertheless, there is still resistance in the medical community, particularly in this time of frequent medical malpractice suits, to do what was, until recently, thought to be forbidden by the common law (or judicial opinion).

The problem is even more difficult for women under 18 years, the group specifically of concern in the primary prevention of school age pregnancy. Although a number of states have statutory approval to provide contraceptives to minors under 18 years, for the most part, one must invoke the "mature minor doctrine," which means that a minor "who is sufficiently intelligent and mature to understand the nature and consequences of a treatment which is for her benefit . . ." may give permission for care without parental approval or knowledge.[17] Acceptance of this doctrine is not universal, but it is growing. Physicians nevertheless are still often hesitant to provide services without parental consent to women under 18 years.

Abortion

There is no question that a significant proportion of pregnancies in women under 18 years are now aborted.[18] This proportion may increase as attitudes toward abortion change and if the accessibility of abortion increases in many areas of the country. What is not clear is whether public programs should in any way encourage teenagers to consider abortion or attempt to provide education about abortions as a part of family life and sex education programs. There are serious moral questions involved, and the psychological sequela of abortions to adolescents are not clear.[14] It would seem that the most that could or should be done, at present, is to increase the accessibility of abortion services for adolescents. Abortion is also sometimes involved in the legal questions about parental consent.

Cost-Effectiveness Issues In Primary Prevention

The CDC gave the 1973 abortion ratio for women under 15 years as 1,237 abortions per 1000 live births; a minimum estimate from the same source for the abortion ratio for those 15-17* years would be 600/1000 live births. This means that approximately 410,000 pregnancies occurred to women under 18 years in 1973 and about 160,000 of these (40%) ended in abortion. This was at a time when abortions were not everywhere easily accessible to adolescents, especially without parental consent. It is clear that, regardless of what is thought of abortions from a moral or health point of view, abortions now represent a major form of "primary prevention" of live births to young mothers. It is possible that if legal abortions become unavailable, contraceptives would take their place, but that is doubtful in most cases of adolescent pregnancy.

Under the assumption of no abortions, the problem of school age parenthood would almost double over a short period of time. Congress recently prohibited payments for abortions with Medicaid funds, but the impact of this at the moment is unclear. Therefore, subsequent calculations would assume the fertility rates and abortion ratios that existed in 1973.

It is also likely that the numbers of adolescent deliveries will start dropping in a few years due to the declining cohort sizes, which, in turn, are caused by the falling fertility rates in the 1960s and early 1970s. For the following calculations, cohorts of 4 million young people are assumed in each year of age, of which 2 million are assumed to be young women.

What would be the cost of a family life and sex education program over four years in junior high and high school? Assuming that the average yearly school costs per student in these grades are $1500 and that 10% of the educational resources would go into the family life and sex education program for four years of their education, the cost would be $150 per year per student or $2.4 billion per year (16 million students × $150 per student). The value of these programs would be greater than just fertility control, of course, but in the absence of good studies, it seems unlikely that greater than a

---

*The CDC reported these only as 539/1000 for age 15-19.

10% reduction of under-18 pregnancies (or deliveries) would occur from the addition of such a program. The under-18 fertility benefits from such a family life and sex education program, under these assumptions, would be a yearly reduction of about 25,000 deliveries per year to women under 18 years. That implies a cost of about $96,000 to prevent one pregnancy, if all the family life and sex education effects were assigned to fertility.*

If the approximately 225,000 adolescents carrying their first pregnancy to term were receiving intensive family life and sex education services as a part of comprehensive programs, and if 20% of the $1500 per year put into these students' education were put into this subject (or $300 per year per pregnant student), the cost would be $67.5 million per year. Evaluative studies have suggested that perhaps a 25% reduction of rapid subsequent pregnancies (under age 18) would occur.[13] This would mean preventing about 6500 of the 26,000 or more second and third deliveries before age 18. An investment of money 3% as large would prevent about one fourth as many births, under these assumptions. Of course, it is to be expected that there would be other important benefits from family life and sex education in both settings, which are not considered here.

One fact not always known is that the prematurity and perinatal mortality rates for second and third birth order deliveries to adolescents are much greater than the same risks for first births to adolescents, even though the adolescents are, on the average, younger at the time of the first births.[19] It may be that the adolescent woman does not tolerate the repeated stresses of pregnancy as well as she would later. This provides a solid, medically based reason for strong programs to help adolescents prevent subsequent pregnancies while still of school age.

Discussion

The argument of this article has been to remind everyone that in complex social-medical phenomena, the simplicity and high benefit-to-cost ratios of, for example, immunization programs, do not exist for primary prevention. It is dangerous, therefore, to assume, without supporting data, that primary prevention is necessarily the best, or even a good, programmatic approach to adolescent pregnancy at this time. Theoretical, practical, and benefit-to-cost problems exist, which make the concept of "primary prevention" difficult to apply in a simplistic manner to adolescent pregnancy.

This does not mean that better ways to assist adolescents in preventing first pregnancies should not be explored. The most basic steps, however, would appear to be the most important at this time, and these steps are more "enabling" than "promotive" in nature: every family and every adolescent should have easy access to contraceptive and abortion education and services, should they choose to make use of them. At this time, active, organized promotion of these services would appear to be more efficient in the context of programs for those adolescents who have already had a pregnancy.

Conclusions

1. There are theoretical, practical, and financial problems with organized programs for the "primary prevention" of pregnancies to adolescents. Organized primary prevention programs will probably not cause a major drop in adolescent fertility rates in the absence of considerable economic, social, and attitudinal changes in the society.

2. Despite the many problems, abortions represent a major form of primary prevention of births to adolescents.

3. At this time, limited resources are probably better spent on providing easy access to contraceptive and abortion education and services, and on intensive programs for those who already have had pregnancies, rather than on a large organized program in primary prevention

References

1. Menken J: The health and demographic consequences of adolescent pregnancy and childbearing. Presented at the Conference on Research on the Consequences of Adolescent Pregnancy and Childbearing, Bethesda, Md, Oct 29-30, 1975.
2. Leavell H, Clark E: *Preventive Medicine*, ed 3. New York, McGraw-Hill, 1965.
3. McKinlay J: The sick role—Illness and pregnancy. *Soc Sci Med* 6:561-572, 1972.
4. MacGregor F: *Social Science in Nursing*. New York, Russell Sage Foundation, 1960.
5. Hern W: Is pregnancy really normal? *Fam Plann Perspect* 3:5-10, 1971.
6. Lewis DO, Klerman LV, Jekel JF, et al: Experiences with psychiatric services in a program for pregnant school-age girls. *Soc Psychol* 8:16-25, 1973.
7. Gabrielson IW, Klerman LV, Currie JB, et al: Suicide attempts in a population pregnant as teenagers. *Am J Public Health* 60:2289-2301, 1970.
8. Klerman LV: Adolescent pregnancy: The need for new policies and new programs. *J Sch Health* 45:263-267, 1975.
9. Hung WB et al: Adolescent fertility—Risks and consequences. Population Reports, Series J, No 10:157-175, July 1976.
10. House EA, Goldsmith S: Planned parenthood services for the young teenager. *Fam Plann Perspect* 4:27-31, 1972.
11. Gordis L, Fassett JD, Finkelstein R, et al: Adolescent pregnancy: A hospital-based program for primary prevention. *Am J Public Health* 58:849-858, 1968.
12. Gordis L, Finkelstein R, Fassett JD, et al: Evaluation of a program for preventing adolescent pregnancy. *N Engl J Med* 282:1078-1081, 1970.
13. Klerman LV, Jekel JF: *School Age Mothers: Problems, Programs, and Policy*. Hamden, Conn, Linnet Books, 1973.
14. Jekel JF, Tyler NC, Klerman LV: Induced abortion and sterilization among women who became mothers as adolescents. *Am J Public Health* 67:621-625, 1977.
15. Jekel JF, Klerman LV, Bancroft DRE: Factors associated with rapid subsequent pregnancies among school age mothers. *Am J Public Health* 63:769-773, 1973.
16. Fineberg B: *Evaluation of the New Teen Clinic of PPGNH*, thesis. Yale School of Public Health, New Haven, Conn, 1973.
17. Paul EW, Pilpel HF, Wechsler NF: Pregnancy, teenagers, and the law, 1976.*Fam Plann Perspect* 8:16-21, 1976.
18. US Dept of HEW, Center for Disease Control: *Abortion Surveillance, Annual Summary, 1973*. Atlanta, CDC, 1975.
19. Jekel JF, Harrison JT, Bancroft DRE, et al: A comparison of the health of index and subsequent babies born to school age mothers. *Am J Public Health* 65:370-374, 1975.
20. *Comparison of Neonatal Mortality From Two Cohort Studies*, Series 20, No 13. National Center for Health Statistics, HEW Publication HSM 72-1056, June 1972.

---

*The point here is *not* to consider whether such a cost, if accurate, would produce sufficient benefits to make it worthwhile; rather the purpose is to develop a model for comparing the advantages of two different approaches.

Abortion On Request: The Physician's View

Alan F. Guttmacher, MD

Reprinted with permission from
THE AMERICAN BIOLOGY TEACHER,
Volume 34, Number 9, December 1972.
Courtesy of the
National Association of Biology Teachers, Inc.
11250 Roger Bacon Drive
Reston, Virginia 22090

Abortion is a topic charged with sparks producing positive and negative emotional ions. The contrasting points of view have been polarized into two contesting organizational themes: "the right to choose" and "the right to life." The former contends that every women should have freedom to choose whether or not to continue a pregnancy; the latter thinks that once pregnancy has begun, its elimination is murder. It is impossible to compromise such opposite points of view—so the sparks fly and will continue to fly. To persuade one already committed to either concept to change sides is virtually impossible, for abortion is a "gut" issue, not a cerebral one. The attitude of most is greatly influenced by religious origin and belief. Most Protestants and Reform and Conservative Jews favor legal abortion on request; Catholics and Orthodox Jews approve abortion only when continuation of pregnancy threatens a woman's life—today, medically, a rare situation.

Although attitudes for and against abortion may be defined in these terms, there is a growing U.S. consensus in favor of state neutrality on abortion. This expresses itself in increasing majority support for abortion laws that permit freedom of conscience for all—acceptance for those who see abortion as moral, and abstention by those who do not.

An Old, Always Controversial Topic

Abortion is not new. Social anthropologists question which is the more ancient: contraception (probably by coitus interruptus) or evacuation of the fetus. No doubt early man detected the residence of the fetus in the uteri of pregnant animals he slew and perhaps in pregnant women who had been severely wounded. The fact that all folk literature from every continent and region contains magical and rational techniques of performing abortion bespeaks its antiquity (Devereaux, 1967). Techniques of abortion are described in the oldest medical texts extant: a 5,000-year-old Chinese herbal suggests mercury; and 4,000-year-old papyri written by the priest-physicians of the Pharaohs list medical and mechanical means. Abortion must have been common in Babylon 3,900 years ago, for in the Code of Hammurabi both the aborter and the woman aborted were subject to death by crucifixion. The famous *Gynecology* of Soranus, written in Rome about 130 A.D., devotes most of a chapter to considering whether it is wiser to prevent pregnancy or eliminate it (Guttmacher, 1963).

The Christian church since its inception has been opposed to abortion, but it has taken different positions at different times on when life begins. Theologically, there can be no crime against the fetus until it has life—but when does it become a living thing and when does it acquire a soul? Some early religious leaders agreed with the Hippocratic concept that life begins 40 days after fruitful coitus in the case of a male fetus and 80 days in a female. (Women's Lib protagonists must remember that virtually all early medical and religious authors were men.) Others thought that life begins when the fetus is first capable of thought; still others, when it begins to move. St. Thomas Aquinas (1225-74) was of the latter opinion, and his weighty view affected not only church dogma but English common law: abortion was no crime until there were discernible fetal movements. This remained English law until 1803, when the Lord Ellenberg Act made abortion a felony at any time in pregnancy (Williams, 1958). The American colonies operated under English common law, and later the states did the same until specific statutes were passed in their legislatures. The first state to copy the English statute of 1803 was Connecticut, which in 1820 made all abortions, with no exceptions for any reason, criminal offenses. The first political jurisdiction in the world to create an exception was New York: in 1828 it permitted abortion, but only to "preserve the life of the mother." Other U.S. states soon did likewise, some using different verbiage, such as "to promote the safety of the mother" (Guttmacher, 1954). In total effect these statutes made legal or therapeutic abortion infrequent; and until 1967, when a few states first liberalized their laws, no more than 9,000 legal abortions were performed annually in the whole country: about two per 1,000 live births (Tietze, 1970).

The Illegal-Abortion Racket

This does not mean that abortions were not done; they were, but they were performed illegally. It has been estimated that between 200,000 and 1,200,000 illegal abortions were performed annually in recent years in this country (Calderone, 1958). The round number of one million is a commonly accepted "guesstimate." At all events, illegal abortion has been described as the third largest U.S. racket, being surpassed only by gambling and narcotics.

The unenforceability of existing strict state statutes allowed criminal abortion to flourish, with its tragic toll of death and illness. In addition, the rank ethnic and socioeconomic discrimination inherent in both legal and illegal abortion practices induced many lawyers, physicians, and laymen to seek liberalization (Guttmacher, 1972). The discrimination that existed in legal abortion was well documented by Gold *et al.* (1965). For example, in New York City in 1960-62 the incidence of legal abortion in proprietary hospitals was 3.9 per 1,000 deliveries; on the private services of voluntary hospitals it was 2.4; and on the ward services of the same institutions it was 0.7. Municipal hospitals, in which the poor were concentrated, showed the miniscule abortion rate of 0.1 per 1,000 live births. There was also a marked ethnic differential: the rate of legal abortions in New York City per 1,000 deliveries was 2.6 for whites, 0.5 for blacks, and 0.1 for Puerto Ricans. In illegal abortions the size of the pocketbook was and is the primary safety factor: several hundred to a few thousand dollars could purchase a relatively safe clandestine abortion from a U.S. physician or a medical sojourn to Japan; $50 to $100, the services of an unsafe paramedical worker, such as a midwife or an operating-room orderly; and $5, dangerous equipment from a pharmacy, such as a "bougie" for self-abortion. Those lacking $5 relied on coat hangers or other domestic articles.

P.E.

Beginnings of Reform in the U.S.

The widespread urge to reform abortion laws first took substance in the United States in 1962 as part of a suggested revision of the penal code by the American Law Institute, a small and select group of scholars, judges, professors of jurisprudence, and attorneys. The ALI wished to extend indications for abortion beyond the circumscribed necessity to preserve life. It recommended that a doctor should be permitted to perform abortion if (i) continuation of pregnancy "would gravely impair the physical or mental health of the mother," (ii) the doctor believes "that the child would be born with grave physical or mental defects," and (iii) the pregnancy resulted from rape or incest (Guttmacher, 1972).

The ALI code was not at once adopted by legislatures, but it did influence medical opinion in favor of abortion for the preservation of health. The most difficult health hazard to document—and equally difficult to refute—is trauma to the psyche imposed by continuation of pregnancy. "Psychiatric" indications for abortion rapidly increased. One investigation found that in the year 1963 psychiatric indications accounted for 0.57 legal abortions per 1,000 live births; in 1965, 0.76; and in 1967, 1.50 (Tietze, 1970). Psychiatric indications were so ill defined and elastic that they soon became a first-class ticket for legal abortion. But this tended to increase socioeconomic discrimination and had little effect on mortality and morbidity.

In 1967 the legislatures of Colorado, California, and North Carolina and in 1968 of Maryland and Georgia liberalized their abortion statutes, using the ALI code as their prototype. Between 1967 and 1968 legal abortions increased, nationally, from 2.59 to 5.19 per 1,000 births; these included abortions for psychiatric indications, which went from 1.51 to 3.61 (Tietze, 1970).

Early results in the five states with liberalized laws were unsatisfactory. The legal abortions were too few to have an appreciable impact on illegal abortion, maternal mortality and morbidity, or discrimination. In 1968 Colorado reported 450 legal abortions and California reported 6,000. Since 1968 California (still using ALI legislation) has reported more than 100,000 a year—but more than 95% of these abortions have been performed on psychiatric grounds. In truth, the law places the psychiatrist in the untenable position of becoming an authority—both judge and jury—in socioeconomic matters. In Colorado a few Denver hospitals have been doing virtually all pregnancy interruptions and have been doing so primarily on private patients, because two affirming psychiatric consultations are required and private consultations are expensive; psychiatric appointments in Denver's public psychiatric facilities recently were booked solid for three months.

It has become obvious to many, including me, that the only way to democratize the performance of abortion and to increase the number of abortions sufficiently to curb illegal abortion is to remove abortion from the criminal code and to allow women unfettered choice. But only four states have removed abortion from the criminal code: Hawaii, Alaska, New York, and Washington—the first three by legislative action and Washington by popular ballot. In May 1972, due to intimidating pressure by the Right to Life lobbyists, the New York legislators who were trying for reelection repealed the state's liberal statute; however, Governor Nelson D. Rockefeller vetoed the bill, and the liberal statute remained in force. Most of the recent national public-opinion polls show that the people favor abortion on request, which would give the state a neutral role; but the opposition is so solidly organized and well financed that its political pressure and emotional appeals sometimes succeed in intimidating legislatures.

New York's Liberal Law

The New York statute is the most liberal abortion law in the world. It only requires that abortion be performed by a licensed physician and that the pregnancy be no more than 24 weeks in duration. The law says nothing about age, marital status, place of residence, or permission of spouse if married. However, the New York City Board of Health has established medical guidelines. Abortion may not be performed in a doctor's office in New York City; it may only be performed in a hospital, its outpatient department, or a free-standing abortion clinic, which must conform with guidelines established by the Board of Health and must be approved by the board. The guidelines require an arrangement with a nearby "backup" hospital, which agrees to admit any of the clinic's patients in case of emergency; furthermore, no patient pregnant for more than 12 weeks may be aborted in a free-standing clinic.

The New York City statistics have been accurately recorded and reported (Pakter and Nelson, 1971; Bureau of Maternity Services, *passim;* Office of Health Services, *passim*), but reliable figures from the rest of the state are not available. In New York City, 278,122 legal abortions were performed during the first 18 months of the new law (1 July 1970 to 31 December 1971). 35.5% of patients were residents of the city; 64.5% were nonresidents. The eight states represented by the largest numbers of out-of-state patients had the following ranking: New Jersey, Ohio, Michigan, Illinois, Pennsylvania, Florida, Massachusetts, and Connecticut. 68.9% of patients had out-of-wedlock pregnancies—about 55% were single women and 15% were divorcees or widows—and 30% of patients were married. Recently, about 4,250 abortions were being performed weekly; half of them were being done in the 18 free-standing clinics. Abortions at less that 12 weeks' pregnancy were formerly done by dilatation of the cervix, followed by scraping or curettage of the uterine contents—the operation called "D&C"; but this has been largely replaced by aspiration, usually after injecting a local anesthetic into the cervix. A canula is inserted, and the embryo and placenta are sucked out through it at negative pressure of 0.5 to 1 atm. Aspiration, also called suction, is more rapid and has fewer complications than D&C.

These clinics charge $100 to $150. Some scale the fee downward for those unable to pay the full amount. Residents of New York City qualify for abortion at one of the 15 municipal hospitals; if the patient is able to pay, a top fee of $160 is charged, but if she is unable to pay, Medicaid reimburses the city. Hospital abortions in voluntary or proprietary institutions cost $300 to $500 or more, including the doctor's fee. Cases beyond 12 weeks are more expensive, because pregnancy is terminated in a hospital by the "salting-out" procedure or by hysterotomy, and both require several days' hospitalization. Salting-out entails the insertion of a needle through the abdominal and uterine walls into the amniotic fluid sac and the removal of 200 ml of amniotic fluid, which is replaced by a 20% saline solution. The fetus dies within an hour; after 12 to 24 hours uterine contractions commence; and after several more hours abortion occurs. Hysterotomy—rarely done unless tubal sterilization is planned concomitantly—is simply a miniature abdominal cesarean section.

Evidence of Success in New York City

What have been the results in New York City of the liberal program? I shall measure them by four parameters: maternal mortality, discrimination in abortion practice, the out-of-wedlock birth rate, and the effect on the incidence of illegal abortion.

Maternal mortality is expressed in total deaths from abortion, pregnancy, labor, and delivery, as well as those occurring during the first postpartum month from obstetric causes, for every 10,000 live births. The figures quoted are for New York City residents. In 1969 the rate was 5.3. In 1971, the first full year in which liberal abortion was practiced, it had dropped to 2.9—the lowest figure recorded in the history of the New York City Health Department. Not only was there a sharp decline in abortion deaths; obstetric deaths from other causes also declined. In some measure the latter phenomenon is due to the fact that a large number of high-risk pregnancies and births were eliminated—those occurring in girls 17 years old or younger and in women over 35 years old. 6% of the abortions were performed on residents 17 or younger and 10.1% on women 35 or older.

Mortality associated with legal abortion is said to be 8 per 100,000 procedures (Tietze and Lewit, 1972). Deaths are concentrated in late abortions (beyond week 12). Tietze and Lewit reported 53,000 early abortions; there was only one death: the suicide of a young girl who at autopsy proved not to have been pregnant. There is every likelihood that mortality will be reduced when the public is taught and encouraged to seek early-pregnancy termination.

Ethnic discrimination in legal abortion among New York City residents, which was so marked in the beginning of the 1960s, seems to have disappeared: 54.2% of births and 45.3% of the abortions occurred among whites; 29.6% and 43.9%, respectively, among blacks; and 16.2% and 10.8%, respectively, among Puerto Ricans.

Out-of-wedlock births increased in New York City about 5% a year during the decade 1960-70. In 1971, instead of increasing, out-of-wedlock births showed a decline for the first time, the decrease being 8.9% in one year. In-wedlock births continued their decline of the past several years, the 1971 number being 8.1% fewer. On the basis of these data, Tietze has estimated that three in four abortions among New York City residents replaces illegal abortions and that one in four prevents the birth of a child unwanted in early pregnancy.

The last of my parameters for measuring the success of New York's abortion law—decrease in illegal abortions—is more difficult to measure. Because illegal abortions are clandestine, it is impossible to obtain incidence figures before and after liberalization. There are, however, suggestive data. One is the decline in illegal-abortion deaths. During the first 18 months of the new law there were nine deaths in New York City associated with criminal abortion—seven during the first 12 months and two the last 6 months. Very likely, as the liberal new law is becoming better known fewer women are resorting to illegal operators. Furthermore, the incidence of incomplete abortions—cases in which women enter hospitals after abortion has begun elsewhere, either illegally or spontaneously—seems to be declining: in 10 municipal hospitals, taken together, incomplete abortions averaged 480 a month for July-December 1970, 350 a month for January-June 1971, and only 169 for July-December 1971. It is assumed that the drop resulted from fewer criminal abortions, because incomplete abortions that have their onset spontaneously are likely to remain fairly constant.

From the sociomedical point of view, abortion on request appears to be an unqualified success. Nevertheless, it should not be viewed as the preferred method of conception control. Effective contraception should be the first line of defense against unwanted pregnancy. Safe, humane, dignified abortion must be available to all as a second line of defense—which means defense against failed contraception or failure to use contraception.

Abortion for Genetic Reasons

Abortion for genetic reasons should have special interest for biology teachers, for it puts into clinical application the rapidly developing field of cytogenetics. Through the relatively simple technique of amniocentesis, which can be performed abdominally after week 15 or 16 of pregnancy, 10 ml of amniotic fluid is removed. Centrifuging the fluid yields a large number of fetal cells that have been sloughed from the mouth mucosa, skin, amnion, and bladder and then voided in the fetal urine. The cells can be studied for the presence or absence of Barr bodies to determine sex; or they can be cultured for chromosome and enzyme studies. In this way genetic abnormalities can be diagnosed by midpregnancy, and the pregnancy can be terminated by abortion.

Such a procedure is performed in high-genetic-risk pregnancies, which are those in mothers who have previously produced a genetically abnormal child or in women of age 40 or more. In the latter group, one pregnancy in 40 gives rise to a child with Down's syndrome (mongolism), which is diagnosable from its association with trisomy and 47 chromosomes. Many other examples could be given. Some conditions are sex-linked; they include hemophilia and muscular dystrophy. Selective therapeutic abortion in women who have borne affected males could allow them to bear healthy daughters by terminating pregnancies carrying a male fetus. Then too, matings giving rise to a child that withers away with Tay-Sachs disease (amaurotic idiocy) can be protected from recurrence by culturing fetal cells to determine chemically the absence or presence of a particular enzyme. If the enzyme is absent—one chance in four—the pregnancy can be aborted and another pregnancy undertaken.

The increasing importance of abortion for pregnancies with fetuses that have proven genetic defects argues against prohibiting all abortions after week 12, which some lawmakers advocate. Amniocentesis cannot be done until week 15 or 16, and some genetic studies (particularly enzyme studies) require four or five weeks for completion, because the few fetal cells must be cultured to form a sizable mass. Therefore, abortion should be allowed until at least week 21 of gestation.

I admit that abortion is a complex issue and that the viewpoint expressed here is that of an informed physician who is emphasizing the medical issues. To be sure, there are other issues; but to the physician the medical advantages of liberal abortion far outweigh other considerations.

References

1. Bureau of Maternity Services and Family Planning, New York City Department of Health, 1971 *et seq.* Trimonthly bulletins on the abortion program, issued by J. Pakter, M.D., director, Bureau of Maternal and Child Health.
2. Calderone, M., ed. 1958. *Abortion in the United States.* Harper & Bros., New York.
3. Devereaux, G. 1967. A typological study of abortion in 350 primitive, ancient, and pre-industrial societies. In *Abortion in America*, ed. by H. Rosen. Beacon Press, Boston.
4. Gold, E., C. Erhardt, H. Jacobziner, and F. Nelson. 1965. Therapeutic abortions in New York City: a twenty-year review. *American Journal of Public Health* 55: 964-972.
5. Guttmacher, A. F. 1954. Therapeutic abortion, the doctor's dilemma. *Journal of the Mt. Sinai Hospital* 21: 111-121.
6. ———. 1963. The legal and moral status of therapeutic abortion. In *Progress in gynecology* IV, ed. by S. Sturgis. Grune & Stratton, Inc., New York.
7. ———. 1972. The genesis of liberalized abortion in New York: a personal insight. *Case Western Reserve Law School Review* 23: 756-778.
8. Office of Health Services, New York City. 1971 *et seq.* Statements issued by G. Chase, administrator.
9. Pakter, J., and F. Nelson. 1971. The first nine months. *Family Planning Perspectives* 3: 5-12.
10. Tietze, C. 1970. United States: therapeutic abortions 1963 to 1968. *Studies in Family Planning* 59 (Nov.): 5-7. [Population Council publication.]
11. ———. and S. Lewit. 1972. Joint program for the study of abortion. *Studies in Family Planning* 3: 97-122.

The Yam And the Pill

Alwynelle S. Ahl

Reprinted with permission from
THE AMERICAN BIOLOGY TEACHER,
Volume 40, Number 1, January 1978.
Courtesy of the
National Association of Biology Teachers, Inc.
11250 Roger Bacon Drive
Reston, Virginia 22090

In teaching we strive to impart the most up-to-date version of facts and theories to our students. News reporting and the nature of events often obscure our view of origins and history. We lose sight of the many contributions over years of human struggle that lead to noteworthy accomplishments. As teachers of science, and particularly of biology, we have the responsibility to help our students understand the relationship between basic research and events in society that lead to the development of useful technologies. This is particularly important as funds grow tight and the value of basic research as a major national resource is questioned.

Fifteen years have passed since the birth control pill was introduced for general public usage. Many present users of the Pill cannot remember the times before the Pill. Events in several scientific disciplines have interacted with economic and social events to bring rapid, widespread usage of this new technology, the Pill, and in turn the Pill has altered society. This essay reviews briefly the history of contraception and outlines the events that led to the development of the Pill.

Historical Interest in Contraception

As with many things that seem quite new, interest in birth control is really very old. Written records from five thousand years ago reflect human interest in controlling fertility. An Egyptian papyrus 4000 years old mentions the topic. Birth control was a topic for lively discussion among the Greek philosophers 2500 years ago. In China the first written reference to the topic was made 1300 years ago. In India, which is still struggling today to control her birth rate, the earliest discussion of birth control methods extend back some 1600 years (Suitters 1967).

Early methods of birth control were crude, and their efficacy is unknown to us. However, our own methods have, in many ways, paralleled earlier attempts to control conception: mechanical barriers used to prevent sperm from reaching the uterus; use of viscous materials designed to slow down movements of sperm once they are deposited in the vagina. Many different materials have served as mechanical barriers in earlier times. An Egyptian papyrus mentions barrier plugs made of crocodile dung among other materials. Plugs made of beeswax, cloth, dried fruit, sponges, grass, or seaweed have been recommended. Membranes made of animal bladders to line the vagina were recommended in Roman times. These could be regarded as a form of condom for use by the female. Condoms for use by males have been made of a variety of materials with vulcanized rubber beginning to be used in the middle 1800's. Other methods of control depended upon either killing sperm or on slowing their progress into the uterus. The use of half a lemon in the vagina may have served as a diaphragm, as well as contributing acid material to serve as a spermacide in a fashion similar to a small sponge soaked in vinegar. Some Greek writers proposed the use of a mixture of peppermint juice or vinegar and honey (Havemann 1967). Modern contraceptive jellies, creams, and foams depend upon these same principles: acids kill sperm; sticky and viscous substances slow sperm down.

Birth control had the same goal then as now, that of giving people control over their lives. It offered the hope that societies might balance population and resources and assure adequate food and basic necessities for all. These ancient devices, like their modern counterparts of foams, creams, jellies, diaphragms, and condoms, did not give complete protection against conception. Not until the middle of this century was virtually failure-proof protection against conception developed as the now famous Pill.

The history of the Pill dates back more than 100 years when the first observations were made that led to biochemical insights eventually culminating in development of the Pill. The path to the Pill was not a direct one, as events in chemistry, zoology, botany, and social history finally coalesced in mid-century to yield the Pill. Earlier during the Victorian era, public discussion of sex was considered lewd and became synonymous with pornography. The purchase of contraceptives or traffic in contraceptive literature across state boundaries was made illegal by the Comstock Act, a Federal statute passed in 1873. Even physicians were unwilling to discuss birth control with their patients for fear of prosecution. A host of state laws grew up to provide "Comstock protection" to the general morality within each state. Years of effort by Margaret Sanger resulted in a successful challenge of the Comstock Law in court in 1937; contraception was no longer classed as pornography, at least in some states. Interestingly, the last state law of this type was not rescinded until the 1960's. By this time, however, the law was largely ignored and use of contraceptives, especially the Pill, was common (Kennedy 1970).

The Early Years

The first studies that served as the foundation for later advances leading toward the development of the Pill were reported by Berthold in 1849 (Illinois Institute of Technology Research Institute 1969). He transplanted testes of cocks into previously caponized roosters. The capons with transplanted testes soon behaved like true roosters, crowing and showing off their bright red combs and wattles. The capons without transplanted testes grew fat, lazy, and sluggish. For almost fifty years thereafter no further studies in physiology were reported that had direct bearing on the development of the Pill. However, after 1896, the year in which Knauer reported the existence of a female sex hormone, pertinent developments in anatomy and physiology came quickly. The role of the corpus luteum in inhibiting ovulation, maintaining pregnancy, facilitating implantation, and causing endometrial proliferation were all established by 1910. In 1922 the control of the corpus luteum by the pituitary was reported. However, it was not until 1929 that progesterone was identified as the physiologically active agent in the corpus luteum.

During this same period, chemists were involved in studies on alcohols and alcoholic compounds. In 1903 Windhaus gave the name sterols to those members of the alcohol family that could be crystallized. Botanists, meanwhile, had discovered substances in plants that they called sapogenins. The sapogenins were found in many plants, but were especially common in roots of members of the lily family. Between 1925 and 1930 the botanists' sapogenins and the female hormone, estrogen, of the physiologists, were recognized as members of the same chemical class of sterols. This seemingly useless observation that both plants and animals produced these crystallizable alcohols was to have enormous importance for future development of the Pill.

Years of Rapid Development

During the 1930's relatively pure preparations of the major human steroid groups were made. Heroic efforts and enormous quantities of starting materials were required to obtain very small amounts of steroids. Nine hundred and eight kilograms of bull testes yielded 0.3 grams of pure testosterone. Ovaries from over 80,000 sows were processed to yield only 0.012 grams of estrogen. As a result, the cost of these steroid hormones was high. Nevertheless, in 1931 pharmaceutical companies in the United States and in Germany began their commercial manufacture.

Meanwhile, physiologists came to recognize the possibilities for chemical control of fertility, infertility, and menstrual disorders, and began to understand the relationship of the hormones in pregnancy. By 1940 hormones were being used experimentally in the treatment of menstrual disorders and infertility. At this time, progesterone cost $200 per gram, so hormonal treatments were not economically feasible for the general population. If these treatments were to be widely useful, a less expensive way of producing the steroids had to be found.

The Search for Synthetic Steroids

In 1944 a method was developed for preparing a physiologically active compound related to progesterone starting with the animal steroid cholesterol, the same substance that is implicated in arterial disease and gallstone formation in humans. This material could be extracted from animal brains and spinal cords, but relatively large amounts of these were required and the processes of purification and conversion were still very expensive.

Early in 1940, even before the successful synthesis of the progesterone homologue, the chemist Russell Marker had begun a systematic search for another source of starting material for the process of synthesizing progesterone. A brilliant chemist whose specialty was the synthesis of complex organic compounds, Marker turned to the vegetable kingdom for this source. It is here that the sapogenins mentioned earlier came into their own. Marker knew that one of these, diosgenin, was similar in structure to progesterone. The problem was to find a vegetable material sufficiently rich in diosgenin and sufficiently easy to obtain and process.

From 1940 to 1947, with the assistance of others, Marker evaluated some 400 plant species for their content of diosgenin; most had no value (Shefner and Hawrylewicz 1969). His search led him to travel to Central America and Mexico. In Mexico he found his ideal plant: the roots of *Dioscorea mexicana*, a true yam from southwestern Mexico, had the highest levels of diosgenin. Having developed the necessary chemical process and having found an appropriate starting material, Marker tried to obtain financial support for commercial production, but without success. At this point he walked out of his job as a chemistry professor at a Pennsylvania university, moved to Mexico City, and became a one-man chemical company. By 1949 Marker had succeeded in synthesizing the sex steroids from yam roots, and his company, Syntex, began commercial production (Illinois Institute of Technology Research Institute 1969). By 1950 inexpensive sex hormones were available for research and treatment.

While these developments in the chemistry of reproductive hormones were going on, other developments were taking place that contributed to our present practices in birth control. By the middle 1930's, because of the work of Margaret Sanger, a great visionary who spent her life teaching the social value of planned parenthood and population control, and others, Federal courts and state legislatures had finally struck down the prohibitions against dissemination of information about contraception and against its practice. By 1937 the American Medical Association jumped on the bandwagon by declaring contraception a legitimate and legal concern of physicians (Sanger 1938). Basic research in reproductive physiology, which had slowed down during the years of World War II, was picking up again. One of the active workers in this field was Gregory Pincus, who was engaged in research on the influence of sex hormones on a variety of human illnesses. However, he had not been primarily concerned about the use of these as agents of birth control. His interest was turned in this direction through a meeting with Margaret Sanger and her group. Sanger impressed him with the importance of world population control and the need felt by individual women to limit family size. Pincus was moved by her arguments, and in 1952 began to direct his efforts toward development of the oral contraceptive pill (Pincus 1965).

The work of Pincus and many others resulted in 1957 in the approval by the Federal Drug Administration of Enovid for oral use in treating menstrual disorders. Enovid was produced by Searle Pharmaceutical Company as a combination of mestranol and norethynodrel, synthetic estrogen and progestin, respectively. In 1960 Enovid was approved by FDA as an oral contraceptive. It took only two years for Enovid to gain widespread use as a contraceptive (Suitters 1967). Women in the United States were more than ready and willing to accept this Pill, which gave them virtually complete control over their own reproduction. The United States birth rate fell dramatically from 25 births per thousand of the total population in 1955 to 17.9 in 1967, only seven years after FDA approval of an oral contraceptive.

Women's new ability to control their participation in reproduction gave enormous momentum to the recent upsurge of women's rights. With a firm control over pregnancy, women flocked to the job market, continued in school in greater numbers, and in general, exerted more influence over their own destinies. The ability to control pregnancy led to a new sexual freedom and awakening, not just for women, but men as well. But not all of the results of this new freedom were beneficial. For example, the incidence of venereal disease began to rise as the protective condoms were abandoned for the Pill. Changes in lifestyle among youths have been dramatic. Marriage as a prerequisite for active sexual involvement does not have the importance it once did, a shift which has caused great concern for the moral fiber of society and embarrassment for many parents as their children have embraced the new morality. New sexual openness has led to demand for more research in reproductive processes to produce better pills with fewer side effects, as well as improvements in contraceptive devices (Kennedy 1970). It has also led to increasing public acceptance of sterilization for permanent contraception.

A long time has elapsed from the initial observation of Berthold to the development of a useful technology. Berthold's roosters over 100 years ago set in motion a series of events that have changed the world and the pattern of our lives within it. Early scientists were doing basic research, studying for the sheer joy of knowing. Workers from many fields of science were involved, and early work suffered from a lack of communication among these researchers fostered in part by their different terminologies, which hindered collaboration and mutual understanding.

Economic factors usually have an important effect on application and development of potential technologies. In this case the extremely high price of the sex steroids was prohibitive until the readily available and inexpensive steroids were developed by Marker. Social needs and social forces may often be either an important deterrent or impetus to technological achievement. The latter was true of Margaret Sanger's lengthy and vigorous efforts to make birth control a legitimate medical problem. Her spur to and support of Dr. Gregory Pincus in 1951 led directly to the development of an oral contraceptive. As the new technology, the Pill itself, became available, overwhelming demand worldwide fueled new and economically important industries. The search and collection of the barbasco root (true yam) in southwest Mexico continues to be a major source of income for peasants in that area, as well as the major raw material source for synthesizing the hormones in the Pill.

In recent years, the safety and side-effects of the Pill have come under question. Whatever the future may bring, the Pill has already had broad, deep, unexpected, and unpredicted effects on our personal lives and on our society. Problems and difficulties with its use have stimulated a search for more and better contraceptives. Its use has also fueled research into how the hormones, of which the Pill is composed, work and into the physiology of reproduction. What began as Berthold's curiosity about roosters has traveled full circle by providing a marvelously useful technology that, in turn, has directed our attention back to basic research.

Acknowledgment—I should like to thank Drs. Floyd V. Monaghan and Helen B. Hiscoe, both of the Natural Science Department of Michigan State University, for their helpful comments and patience in reading the manuscript.

References

1. Havemann, E. 1967. *Birth Control*. New York: Time-Life Books.
2. Illinois Institute of Technology Research Institute (under Contract C535 for the National Science Foundation). 1969. *The oral contraceptive pill*, volume 1.
3. Kennedy, D.M. 1970. *Birth control in America*. New Haven: Yale University Press.
4. Pincus, G. 1965. *The control of fertility*. New York: Academic Press.
5. Sanger, M. 1938 (Pub. as Dover Edition 1971). *An autobiography*. New York: Dover Publications, Inc.
6. Shefner, D., and Hawrylewicz, E. J. 1969. *The oral contraceptive vol. 2*, in *Technology in retrospect and critical events in science*. Illinois Institute of Technology Research Institute (under Contract C535 for the National Science Foundation) Vol. 2.
7. Suitters, B. 1967. *The history of contraceptives*. Santiago, Chile: 8th Conference of the International Planned Parenthood Federation.

The Pill at 20: An Assessment

Howard W. Ory
Allan Rosenfield
Lynn C. Landman

Reprinted with permission from
INTERNATIONAL FAMILY PLANNING PERSPECTIVES,
Volume 6, Number 4, December 1980.
Copyright by the
Alan Guttmacher Institute
New York, New York 10010

Twenty years after the introduction of the oral contraceptive in the United States and its use by an estimated 150 million women around the world,[1] it is clear that choice of the pill carries some health risk. Women are concerned about the dimension of that risk and about how it can be reduced. They want to know how possible hazards from pill use compare with those associated with other contraceptives and how they compare with those of pregnancy and childbirth. These are appropriate concerns both of women who want to achieve effective, reversible fertility control, and of the helping professions involved in guiding women to make intelligent fertility control decisions. Thanks to numerous studies* involving hundreds of thousands of women, we can conclude with some assurance that for most healthy, young women, the benefits of oral contraceptive use continue to outweigh the risks. Some of the risks are, indeed, serious. However, the most serious, life-threatening dangers—those involving the cardiovascular system—could be sharply reduced if women using oral contraceptives would not smoke. The risks could also be substantially decreased if the clinicians who prescribed the pill helped their patients to understand which of them could expect to use the pill safely—and which are at some risk. The cardinal principle that governs sound prescription practices should apply equally to the pill: Since it is a potent medication, the lowest dose consistent with efficacy should be prescribed.

Cardiovascular Disease: Risk Factors

The most serious adverse effect of pill use—death from cardiovascular disease—is also the most preventable. If women who use the pill would not smoke, at least half of all deaths associated with pill use would be avoided.[2] If, in addition, women with other predisposing factors for cardiovascular disease—such as high blood pressure, high cholesterol and diabetes mellitus—would not use the pill, deaths could be further reduced.

In the United States, an estimated 3.7 of every 100,000 pill users die per year, mainly of cardiovascular diseases—heart attack, stroke or thromboembolism (blood clots), usually to the lung.[3] Assuming that 8.4 million women use the pill,† an estimated 310 deaths occur annually. However, the results of several major studies demonstrate the extent to which the risk of cardiovascular disease in women of reproductive age arises from various predisposing risk factors in addition to pill use.[4] One of these studies explored the risk of heart attack (myocardial infarction) relative to smoking and use of the pill.[5] It found that women who smoke heavily (25 or more cigarettes a day) and do not take the pill are seven times more likely to have a heart attack than women who do not smoke or use the pill. Women who take the pill but do not smoke are four times more likely to have a heart attack than women who do neither.

---

*These include, in addition to retrospective (case-control) studies, long-term prospective (cohort) studies carried out in Great Britain and in the United States. The latter include the Oral Contraceptive Study, Royal College of General Practitioners, Manchester, England; the Oxford/Family Planning Association Contraceptive Study, Oxford, England; and the Walnut Creek Prospective Contraceptive Drug Study, Walnut Creek, Calif.

†The estimate of 8.4 million pill users is based on data from the 1976 National Survey of Family Growth, the Johns Hopkins University 1979 Survey of Young Women and Men, an unpublished 1978 survey of women 18-34 conducted by National Analysts for Syntex, Inc., and on 1977 data from IMS America, Inc.

But women who both smoke heavily and use the pill have 39 times the risk compared with women who neither smoke nor use the pill—a remarkable effect of the combination of predisposing factors.

The impact on the risk of myocardial infarction of adding a third predisposing factor has been shown most recently in a study of American nurses.[6] That study found that pill users were about three times more likely to be hospitalized for myocardial infarction than women with no risk factors. Smokers were five times more likely and women with hypertension about eight times more likely to be hospitalized. Women who were on the pill, who smoked and who had hypertension were 170 times more likely to be hospitalized. This finding is consistent with estimates from a British study that women with three or more risk factors had a relative risk of myocardial infarction 120 times that of women with no predisposing factors.[7] What these figures make clear is that women who smoke and use the pill may pay a heavy penalty.

Age is also a factor in heart attack risk. Thus, while one woman of every 100,000 aged 20-29 dies of a heart attack each year, four women aged 30-34, 12 aged 35-39 and 25 aged 40-44 of every 100,000 in those age-groups will do so.[8] Applying the finding that a pill user is three times more likely than a nonuser to have a fatal heart attack,[9] among 100,000 women aged 20-29 who use the pill, we estimate that three will have a fatal heart attack, and two of these deaths will be attributable to the pill. Among 100,000 women aged 40-44 who take the pill, 75 will have a fatal heart attack, with 50 of the deaths attributable to the pill. (Fortunately, relatively few women in that age-group actually use the pill.)

The conclusion to be drawn from the age data is clear: Women younger than 30 can use the oral contraceptive and run little increased risk of dying from a heart attack. Beginning at age 30, women might wish to review their fertility control needs and consider moving to other effective methods.

A factor associated with an increased risk of another cardiovascular disease, venous thrombosis, is the amount of estrogen in the pill. The risk of the disease among users of low-dose pills is four times that of nonusers; if high-dose pills are used, it is 10 times greater.[10]

Several recent reports suggest that the amount and potency of progestin as well as of estrogen plays a role in increasing a pill user's risk of some cardiovascular diseases, namely, hypertension and superficial venous thrombosis.[11] While these findings are as yet unconfirmed, prudence suggests that women use pills with the lowest potency of progestin as well as the lowest dose of estrogen.

As more data accumulate, the findings of earlier reports may be modified or challenged. Recently, the conclusion of two previous studies that taking the pill is associated with a high risk of subarachnoid hemorrhage (a type of stroke)[12] was challenged by a British investigator. He found that hypertension independent of pill use is the most important factor relating to subarachnoid hemorrhage.[13] His examination of vital statistics produced no evidence of an increase in mortality from this condition over time, even though an estimated two-thirds of British women of childbearing age appear to have used the pill. Earlier U.S. studies had also shown that hypertension sharply increases the relative risk of thrombotic and hemorrhagic strokes, as does smoking.[14] To date, most studies suggest a relationship between oral contraceptive use and cardiovascular disease only for current users of the pill.

Furthermore, most of what we know about the pill concerns formulations used in the late 1960s and early 1970s; these tended to have higher doses of estrogens than do pills today. Thus, findings from earlier studies may overstate the risks to women in 1980.

It is also notable that early studies enrolled mostly older women. All the women in the Oxford/Family Planning Association study were aged 25 or older, as were about 65 percent of the women in the study sponsored by the Royal College of General Practitioners. Similarly, 85 percent of the women enrolled in the Walnut Creek Contraceptive Drug Study were at least 25 years old.

These studies have followed women enrolled for some 10 years so that almost all the subjects are now over 35 years of age. It would be incorrect to apply these results directly to the millions of women in their teens and early 20s who now take the pill.

Finally, three studies have examined trends in vital data before and since the pill was widely marketed, to determine whether the trends are consistent with the results of the various epidemiologic studies that have found an association between use of the pill and increased risk of cardiovascular disease.[15] The results conflict even though two of the studies in question used parts of the same data base. Clearly, the final word on the subject has not yet been written.

The weight of the evidence from the data on cardiovascular disease and oral contraceptives is that although there is a risk of serious illness and even death associated with pill use, it is extremely small among women under 30; the risk of death is probably one or two per 100,000 users per year. The risk is concentrated among women who smoke, women who have other predisposing factors and women who are 35 or older. From the standpoint of safety, women must choose between smoking and the pill. They must be provided with pills of the lowest possible potency and with full details concerning the risks and benefits of pill use. It is imperative that women inform their health providers of any preexisting conditions that might increase their risk of serious complications if they used oral contraceptives. Finally, since most of the increased risk among pill takers is concentrated among older women, whose fertility is declining, it may be prudent for them to use other methods of fertility control.

A final caution concerns applying these conclusions to developing countries where the prevalence of hypertension and high cholesterol levels may be lower than in developed countries. The impact of the pill on cardiovascular disease in these settings may be quite different than in Britain and the United States.

In view of all these observations, it is ironic that a decline in pill use in the United States appears to have occurred among young women, the population at lowest risk of serious side effects. A recent study of the contraceptive practices of college women in southern California finds that between 1974 and 1978, the proportion of women selecting the pill declined from 89 percent to 63 percent.[16] And a study of teenage women who used contraceptives documents a seven percentage point decline in pill use and a six percentage point increase in the choice of withdrawal and rhythm between 1976 and 1979.[17]

On the other hand, comparison of the 1973 and the 1976 National Survey of Family Growth document an 11 percent decline in pill use by currently married or ever-married women. The decline was about seven percent among women aged 15-29, but was 20 percent among women aged 30-44.[18] This suggests that older women, for whom it might be prudent to stop pill use for reasons of safety may, in fact, be doing so.

However, in view of the importance of prescribing pills with the lowest dosage of estrogen, it is troubling that as late as 1978, 25 percent of U.S. women were still using pills with more than 50 mcg of estrogen.[19] It is unclear why this group of women are exposed to unnecessary risk.

Pill and Cancer: Cautious Reassurance

Thus far, though still tentative because of the long latency period involved in the development of most cancers, the news about cancer is reassuring. The overwhelming majority of studies that have examined the issue of the pill's carcinogenicity find that there is no evidence that pill use causes cancer of the ovaries, uterus or breast.[*][20] Indeed, there is some evidence that the pill may protect against ovarian and uterine (endometrial) cancer.[21]

There is as yet no clear-cut conclusion regarding the pill's possible implication in the development of cervical cancer or its precursors, dysplasia and carcinoma in situ. This is the conclusion of a World Health Organization scientific group that examined the extensive research on this question, and other more recent investigations.[22] (The group also noted the virtual absence of studies on invasive cervical cancer.)

One investigation reported that oral contraceptive users might have a slightly increased risk of developing a type of skin cancer, malignant melanoma.[23] However, a more detailed presentation of those data shows the results to be based on only five cases in women less than 40 years of age.[24] Furthermore, the latter report notes that pill users are more likely than nonusers to sunbathe. Since exposure to the sun is a strong predictor of the risk of melanoma, the investigators point out that excessive sunbathing rather than the pill may account for the difference in risk between users and nonusers.

Finally, a benign tumor of the liver, hepatocellular adenoma, has been linked to pill use.[25] The tumor is extraordinarily rare; among long-term users (more than five years), the estimated annual incidence is about 3-4 per 100,000. Although the tumor is not malignant, it occasionally can bleed internally, causing death; an estimated 3-4 women per million long-term users a year may die of this complication.[26] Women on the pill more than five years should be alerted to the possibility of the disease, and should be made aware of its symptoms so that they can seek care promptly should these develop. If long-term users remain in good health and prefer to continue on the pill, they should be placed on low-dose, low-potency preparations, and be checked for liver enlargement or tenderness at the time of regular checkups.

It is still not known whether there are delayed, long-term risks associated with use of an oral contraceptive that might develop 20 or 30 years after its use is stopped. It is imperative that surveillance and careful studies continue.

Benefits Associated with Pill Use

The incidence of at least four diseases is apparently reduced by oral contraceptive use.[27] Women who take the pill are one-fourth as likely to develop benign breast disease as nonusers.[28] They are one-fourteenth as likely to develop ovarian cysts,[29] two-thirds as likely to develop iron deficiency anemia[30] and one-half as likely to develop rheumatoid arthritis.[31] Since these conditions are common, this reduced incidence is a very real bonus. Among every 100,000 oral contraceptive users, there are some 270 fewer surgical procedures performed for ovarian cysts and benign breast diseases than among 100,000 women who do not take the pill.[32]

Pelvic inflammatory disease (PID) is a common, serious infection known to be a major cause of infertility.[33] A recent review noted that pill users compared with nonusers appear to have only half the risk of the disease.[34] If this finding is confirmed, protection against PID may well be one of the most important noncontraceptive benefits of the pill.

Another benefit, of special importance to women in the developing world, is the pill's effect, generally, in decreasing the amount of menstrual flow which in turn results in a decrease in iron loss and anemia.[35]

Other Adverse Effects

Since powerful hormones can affect virtually all the body systems, it is not surprising that a variety of adverse consequences have been ascribed to pill use. Some of these have been confirmed; some have not; and some have been refuted.

Impaired fertility is one alleged hazard that now appears unfounded. With large numbers of young women, many of whom have never been pregnant, choosing the pill, its effect on subsequent fertility is extremely important. The most impressive data on this subject come from one of the long-term, prospective British studies.[36] The investigators found that pill use by women who have never had a child may delay future childbearing by several months, but their inherent ability to have a child is not impaired. Virtually the same proportions of pill users and users of other methods who have never given birth—about 10 percent—fail to do so within 42 months. Among women who already have one child, all but four percent of those taking the pill and an equal proportion of users of other methods have given birth by that time.

It had been suggested that women who use the pill have a somewhat higher risk of poor pregnancy outcomes after they discontinue its use to become pregnant. The same British study (the Oxford/Family Planning Association study) found that pill users run no higher risks than other women of bearing a low-birth-weight or malformed infant, or of having a stillbirth, miscarriage or ectopic pregnancy.[37] Even a woman who becomes pregnant accidentally while using the pill is unlikely, the study found, to give birth to a malformed infant. A large American study confirms this finding of no increased risk of bearing a malformed child among women who become pregnant soon after discontinuing pill use or among those who become pregnant after a longer interval has elapsed.[38] However, the evidence is not all in. A recent study in Wales found an increase in infants with neural tube defects born to mothers who either had used the pill early in pregnancy or had stopped using the pill shortly before they became pregnant.[39]

The two British prospective studies have found no evidence that pill use increases the risk of clinically apparent diabetes.

---

[*] A just-published article confirms that pill users under age 45 have no increased risk of breast cancer. However, it reports a significantly increased risk of this type of cancer for women 45-54 years of age who used the pill within 12 months of the date of diagnosis; this report, based on a very small number of cases, is the only such finding known (see: H. Jick, A. Walker, R. Watkins, D. D'Ewart, J. Hunter, A. Danford, S. Madsen, B. Dinan and K. Rothman, "Oral Contraceptives and Breast Cancer," *American Journal of Epidemiology*, 112:577, 1980).

They base this conclusion on over 160,000 woman-years of experience among women who were currently using or had used the pill.[40]

Among the more commonly reported side effects is an increased risk of vaginal infections.[41] Whether these infections are related to changes in sexual activity or to pill-induced changes in vaginal flora is not clear. A relatively recent study finds no significant association between the pill and urinary infections.[42] This does not confirm earlier findings.[43] While some studies report an increase in depression among pill users,[44] others report an increased sense of well-being.[45] There is no consensus.

The twofold increased risk of gallbladder disease among pill users reported in the early 1970s[46] has not been confirmed by the soon-to-be released U.S. prospective study, the Walnut Creek Contraceptive Drug Study.[47] However, until this study, the association had been widely accepted.

For many years, investigators have reported that pill use is associated with numerous metabolic changes, including alterations of carbohydrate and protein metabolism and of triglyceride levels.[48] The clinical implications of most of these changes remain unclear.

Imperfect Fertility Control

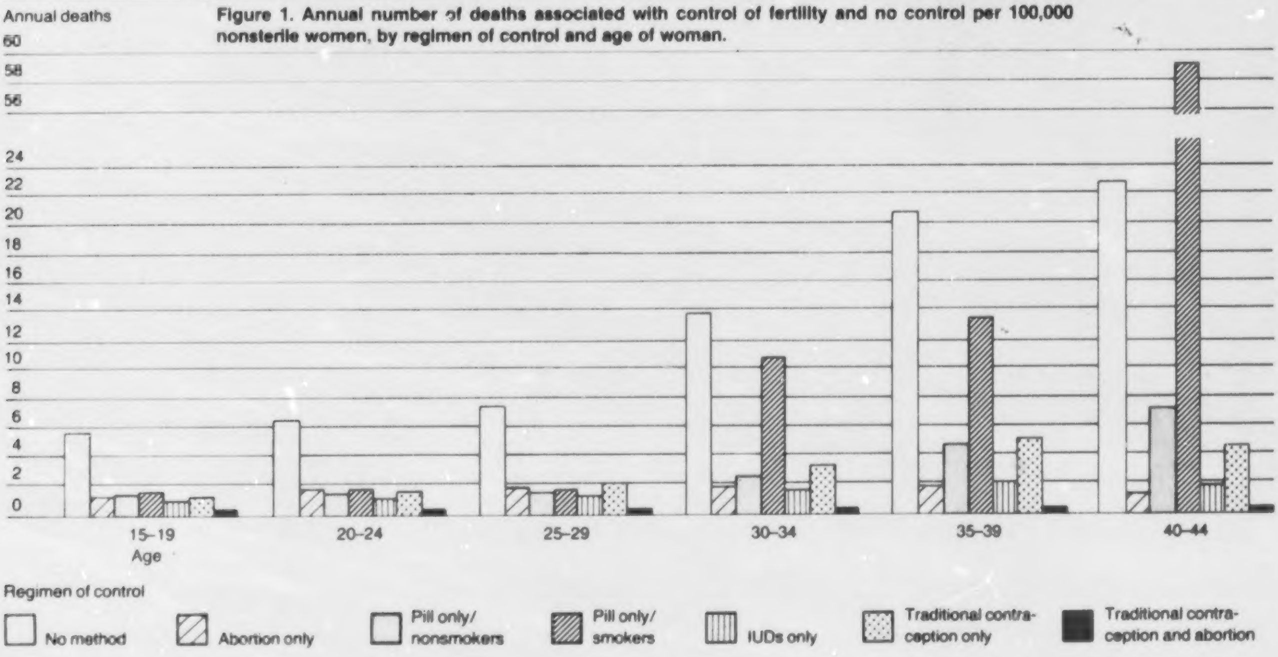
Highly effective contraception is not synonymous with perfect contraception. In actual use, the pill is not 100 percent effective. It is, however, the most effective reversible method available, with a failure rate of about two percent a year. The failure rate with the IUD is about twice as high, while failure rates with the condom and diaphragm/jelly are five and seven times higher, respectively.[49] These are average rates. Highly motivated couples can achieve effectiveness rates that are much higher.

In addition to contraceptive efficacy, a careful appraisal of the pill must include a comparison of pill-associated mortality with maternal mortality, as well as the mortality associated with other methods of birth control and with no birth control.

As previously noted, annual pill-associated mortality in the United States is 3.7 per 100,000 users (ranging from 1.8 for nonsmokers to 6.5 for smokers). The U.S. maternal mortality rate is about 20.6 per 100,000 live births, or more than five times higher.[50] In developing countries, maternal mortality is as high as 250-1,000 per 100,000 live births.[51] It has been suggested that widespread use of contraceptives in general, and of the pill in particular, by developing-world women would have a dramatic impact on both infant and maternal mortality. There are no adequate data on comparative contraceptive risks in the developing world, but there is some evidence that thromboembolism and circulatory diseases are not as prevalent as in the developed world, perhaps because of differences in diet and smoking, among other factors.

By way of comparison, Figure 1 shows estimated mortality levels associated with nonuse of contraceptives and with use of medical methods, traditional methods and traditional methods backed up by abortion in the United States.[52] What is most striking, insofar as this appraisal of the pill is concerned, is that the risk to life among pill users under age 30 who do not smoke is very small and is virtually the same as that among users of the IUD, diaphragm or condom—and is much lower than the risk of death related to childbearing among women who use no birth control. Among pill users who smoke, however, the mortality risk rises sharply at ages 30 and over; and among women aged 40-44, it is more than two and one-half times higher than among women who use no birth control. For users of all other methods, the risk remains fairly constant or, as with nonsmoking pill users, increases only moderately, remaining below the mortality risk related to pregnancy and childbirth among women who do not practice contraception.

Figure 1. Annual number of deaths associated with control of fertility and no control per 100,000 nonsterile women, by regimen of control and age of woman.



Source: See reference 52.

Conclusion

The intensive study of the oral contraceptive over the past two decades (probably making it the most systematically monitored medication in history) has provided a vast array of data concerning its effects on health.

Women today are not in the state of innocence about the pill that women were in when the first coitus-independent reversible oral contraceptive in history was introduced 20 years ago. Women today must know that pill use entails risk—risk to health and, for some, risk to life. Yet millions of women, presented with a relatively large array of methods, choose to use the pill, at least for some period of time. Many prefer the pill to a nonprescription method or diaphragm because of its effectiveness or convenience, although use of barrier methods, backed by abortion, has been shown to be the safest of all alternatives—at least with regard to mortality.[53]

Clearly, the challenge is to communicate to women as clearly as possible which of them can use the pill safely and which of them cannot. As more information becomes available, it may be possible to define more precisely the level of risk that confronts discrete groups of women. It is unlikely, though, that all risks will be eliminated. Equally, it is unlikely that any contraceptive now under development will prove safe for all women. The challenge is to help women to reduce their risks to as low a level as possible.

References

1. B. Stokes, "Filling the Family Planning Gap," Worldwatch Paper No. 12, Worldwatch Institute, Washington, D.C., 1977, p. 17.
2. H. W. Ory, "The Health Effects of Fertility Control," in *Contraception: Science, Technology, and Application-Proceedings of a Symposium*, National Academy of Sciences, Washington, D.C., 1979, p. 110.
3. Ibid.
4. J. I. Mann, R. Doll, M. Thorogood, M. P. Vessey and W. E. Waters, "Risk Factors for Myocardial Infarction Among Young Women," *British Journal of Preventive and Social Medicine*, 30:94, 1976; S. Shapiro, D. Slone, L. Rosenberg, D. W. Kaufman, P. D. Stolley and O. S. Miettinen, "Oral Contraceptive Use in Relation to Myocardial Infarction," *The Lancet*, I:743, 1979; and L. Rosenberg, C. H. Hennekens, B. Rosner, C. Belanger, K. J. Rothman and F. E. Speizer, "Oral Contraceptive Use in Relation to Nonfatal Myocardial Infarction," *American Journal of Epidemiology*, 111:59, 1980.
5. S. Shapiro et al., 1979, op. cit.
6. L. Rosenberg et al., 1980, op. cit.
7. J. I. Mann et al., 1976, op. cit.
8. National Center for Health Statistics, *Vital Statistics of the United States, 1973: Vol. 2, Mortality, Part A*, U.S. Government Printing Office, Washington, D.C. (GPO), 1975.
9. L. Rosenberg et al., 1980, op. cit.
10. P. D. Stolley, J. A. Tonascia, M. S. Tockman, P. E. Sartwell, A. H. Rutledge and M. P. Jacobs, "Thrombosis with Low-Estrogen Oral Contraceptives," *American Journal of Obstetrics and Gynecology*, 102:197, 1975.
11. T. W. Meade, G. Greenberg and S. G. Thompson,"Progestogens and Cardiovascular Reactions Associated with Oral Contraceptives and a Comparison of the Safety of 50- and 30-μg Oestrogen Preparations," *British Medical Journal*, I:1157, 1980; and C. R. Kay, "The Happiness Pill?" *Journal of the Royal College of General Practitioners*, 30:8, 1980.
12. V. Beral and C. R. Kay, Royal College of General Practitioners' Oral Contraception Study, "Mortality Among Oral Contraceptive Users," *The Lancet*, II:727, 1977; D. B. Petitti and J. Wingerd, "Use of Oral Contraceptives, Cigarette Smoking, and Risk of Subarachnoid Hemorrhage," *The Lancet*, II:234, 1978.
13. W. H. W. Inman, "Oral Contraceptives and Fatal Subarachnoid Haemorrhage," *British Medical Journal*, 2:468, 1979.
14. Collaborative Group for the Study of Stroke in Young Women, "Oral Contraceptives and Stroke in Young Women: Associated Risk Factors," *Journal of the American Medical Association*, 231:718, 1975.
15. V. Beral, "Cardiovascular-Disease Mortality Trends and Oral-Contraceptive Use in Young Women," *The Lancet*, II:1047, 1976; M. A. Belsey, Y. Russell and K. Kinnear, "Cardiovascular Disease and Oral Contraceptives: A Reappraisal of Vital Statistics Data," *International Family Planning Perspectives*, 5:2, 1979; and C. Tietze, "The Pill and Mortality from Cardiovascular Disease: Another Look," *International Family Planning Perspectives*, 5:8, 1979.
16. S. M. Harvey, "Trends in Contraceptive Use at One University: 1974-1978," *Family Planning Perspectives*, 12:301, 1980.
17. M. Zelnik and J. F. Kantner, "Sexual Activity, Contraceptive Use and Pregnancy Among Metropolitan-Area Teenagers: 1971-1979," *Family Planning Perspectives*, 12:230, 1980.
18. K. Ford, "Contraceptive Utilization in the United States: 1973 and 1976," *Advance Data from Vital and Health Statistics*, No. 36, National Center for Health Statistics, DHEW, Aug. 18, 1978.
19. W. Rinehart and P. T. Piotrow, "OCs—Update on Usage, Safety, and Side Effects," *Population Reports*, Series A, No. 5, Jan. 1979.
20. M. Vessey, R. Doll, R. Peto, B. Johnson and P. Wiggins, "A Long-Term Follow-Up Study of Women Using Different Methods of Contraception—An Interim Report," *Journal of Biosocial Science*, 8:373, 1976; J. L. Kelsey, T. R. Holford, C. White, E. S. Mayer, S. E. Kilty and R. M. Acheson, "Oral Contraceptives and Breast Disease: An Epidemiological Study," *American Journal of Epidemiology*, 107:236, 1978; and M. P. Vessey, R. Doll, K. Jones, K. McPherson and D. Yeates, "An Epidemiological Study of Oral Contraceptives and Breast Cancer," *British Medical Journal*, I:1757, 1979.
21. J. T. Casagrande, M. C. Pike, R. K. Ross, E. W. Louie, S. Roy and B. E. Henderson, "'Incessant Ovulation' and Ovarian Cancer," *The Lancet*, II:170, 1979; N. S. Weiss and T. A. Sayvetz, "Incidence of Endometrial Cancer in Relation to the Use of Oral Contraceptives," *New England Journal of Medicine*, 302:551, 1980; D. W. Kaufman, S. Shapiro, D. Slone, L. Rosenberg, O. S. Miettinen, P. D. Stolley, R. C. Knapp, T. Leavitt, Jr., W. G. Watrang, M. B. Rosenschein, J. L. Lewis, Jr., D. Schottenfelt and R. L. Ingel, Jr., "Decreased Risk of Endometrial Among Oral Contraceptive Users," *New England Journal of Medicine*, 303:1045, 1980; and J. Shelton, A. Rosenfield and H. Ory, "The Pill and Cancers: Possible Protective Effects," 1981 (in preparation).
22. World Health Organization Scientific Group Review, "Steroid Contraception and the Risk of Neoplasia," Technical Report Series No. 619, Geneva, 1978; R. W. C. Harris, L. A. Brinton, R. H. Cowdell, D. C. G. Skegg, P. G. Smith, M. P. Vessey and R. Doll, "Characteristics of Women with Dysplasia or Carcinoma in Situ of the Cervix Uteri," *British Journal of Cancer*, 42:26, 1980; and S. H. Swann and W. L. Brown, "Oral Contraceptive Use, Sexual Activity and Cervical Carcinoma," *The Walnut Creek Contraceptive Drug Study* (forthcoming).
23. V. Beral, S. Ramcharan and R. Faris, "Malignant Melanoma and Oral Contraceptive Use Among Women in California," *British Journal of Cancer*, 36:804, 1977.
24. S. Ramcharan, F. A. Pellegrin, R. Ray, Hsu, J. P., eds., *The Walnut Creek Contraceptive Drug Study*, GPO (forthcoming).

25. R. B. Rooks, H. W. Ory, K. G. Ishak, L. T. Strauss, J. R. Greenspan, A. P. Hill, C. W. Tyler and The Cooperative Liver Tumor Study Group, "Epidemiology of Hepatocellular Adenoma: The Role of Oral Contraceptive Use," *Journal of the American Medical Association*, 242:644, 1979; J. Vana, G. P. Murphy, B. L. Arnoff and H. W. Baker, "Study of Association Between Liver Tumors and Oral Contraceptive Use: Interim Report," Commission on Cancer, American College of Surgeons, Nov. 15, 1976; H. A. Edmondson, B. Henderson and B. Benton, "Liver-Cell Adenomas Associated with Use of Oral Contraceptives," *New England Journal of Medicine*, 294:470, 1976; and M. Vessey et al., 1976, op. cit.
26. R. B. Rooks et al., 1979, op. cit.
27. H. W. Ory, 1979, op. cit.
28. H. W. Ory, P. Cole, B. MacMahon and R. Hoover, "Oral Contraceptives and Reduced Risk of Benign Breast Diseases," *New England Journal of Medicine*, 294:419, 1976.
29. H. W. Ory and the Boston Collaborative Drug Surveillance Program, "Functional Ovarian Cysts and Oral Contraceptives: Negative Association Confirmed Surgically," *Journal of the American Medical Association*, 228:68, 1974.
30. Royal College of General Practitioners (RCGP), *Oral Contraceptives and Health: An Interim Report from the Oral Contraception Study*, Pitman Medical, New York, 1974.
31. S. J. Wingrave and C. R. Kay, "Reduction in Incidence of Rheumatoid Arthritis Associated with Oral Contraceptives," *The Lancet*, I:569, 1978.
32. H. W. Ory, 1979, op. cit.
33. L. Westrom, "Incidence, Prevalence, and Trends of Acute Pelvic Inflammatory Disease and Its Consequences in Industrialized Countries," paper presented at the International Symposium on Pelvic Inflammatory Disease, Atlanta, Apr. 1-3, 1980.
34. P. Senanayake and D. G. Kramer, "Contraception and the Etiology of PID: New Perspectives," paper presented at the International Symposium on Pelvic Inflammatory Disease, Atlanta, Apr. 1-3, 1980.
35. RCGP, 1974, op. cit.
36. M. P. Vessey, N. H. Wright, K. McPherson and P. Wiggins, "Fertility After Stopping Different Methods of Contraception," *British Medical Journal*, 1:265, 1978.
37. M. Vessey, L. Meisler, R. Flavel and D. Yeates, "Outcome of Pregnancy in Women Using Different Methods of Contraception," *British Journal of Obstetrics and Gynaecology*, 86:548, 1979.
38. K. J. Rothman and C. Louik, "Oral Contraceptives and Birth Defects," *New England Journal of Medicine*, 299:522, 1978.
39. P. N. Kasan and J. Andrews, "Oral Contraception and Congenital Abnormalities," *British Journal of Obstetrics and Gynaecology*, 87:548, 1980.
40. S. J. Wingrave, C. R. Kay and M. P. Vessey, "Oral Contraceptives and Diabetes Mellitus," *British Medical Journal*, 1:23, 1979.
41. W. N. Spellacy, N. Zaias, W. C. Buhi and S. A. Birk, "Vaginal Yeast Growth and Contraceptive Practices," *Obstetrics and Gynecology*, 38:343, 1971; and RCGP, 1974, op. cit.
42. D. A. Evans, C. H. Hennekens, L. Miao, L. W. Laughlin, W. G. Chapman, B. Rosner, J. O. Taylor and E. H. Kass, "Oral-Contraceptive Use and Bacteriuria in a Community-Based Study," *New England Journal of Medicine*, 299:536, 1978.
43. RCGP, 1974, op. cit.
44. Ibid.
45. S. J. Kutner, N. R. Phillips and E. J. Hoag, "Oral Contraceptives, Personality, and Changes in Depression," in S. Ramcharan, ed., *The Walnut Creek Contraceptive Drug Study, Vol. II*, GPO 1974, p. 127.
46. Boston Collaborative Drug Surveillance Program, "Oral Contraceptives and Venous Thromboembolic Disease, Surgically Confirmed Gallbladder Disease, and Breast Tumors," *The Lancet*, I:1399, 1973.
47. S. Ramcharan, F. A. Pellegrin, R. Ray, Hsu, J. P., eds., *The Walnut Creek Contraceptive Drug Study*, GPO (forthcoming).
48. M. H. Briggs, "Steroid Contraception: Metabolic and Endocrine Effects," in J. J. Sciarra, G. I. Zatuchni and J. J. Speidel, eds., *Risks, Benefits and Controversies in Fertility Control*, Harper and Row, Hagerstown, Md., 1978, p. 214.
49. B. Vaughan, J. Trussell, J. Menken and E. F. Jones, "Contraceptive Failure Among Married Women in the United States, 1970-1973," *Family Planning Perspectives*, 9:251, 1977.
50. H. W. Ory, 1979, op. cit.
51. L. Atkinson, R. Castadot, A. Cuadros and A. G. Rosenfield, "Oral Contraceptives: Considerations of Safety in Nonclinical Distribution," *Studies in Family Planning*, 5:242, 1974.
52. C. Tietze, "New Estimates of Mortality Associated with Fertility Control," *Family Planning Perspectives*, 9:74, 1977.
53. Ibid.

Facts About Methods of Contraception

Planned
Parenthood
Federation of
America, Inc.

Reprinted with permission.
Copyright January 1981 by the
Planned Parenthood Federation of America, Inc.
New York, New York 10019

BEST COPY AVAILABLE

	WHAT THIS IS	WHAT THIS DOES	HOW WELL THIS WORKS*	MAIN ADVANTAGES	WHO CAN USE
THE PILL	A monthly series of birth control pills. The ingredients are similar to hormones normally produced in a woman's body.	Most kinds of birth control pills keep your ovaries from releasing eggs. They do this only if you take a full monthly series on time. If you forget one or more pills, you many become pregnant.	Of 100 women on the pill, about 2 may become pregnant during a year of actual use. Women who never forget the pill have less chance of getting pregnant.	It's the most reliable method, and convenient to use. Periods are usually more regular, with less cramps and less blood loss. There's less iron deficiency anemia, less acne among users. It may offer some protection from non-cancerous breast tumors and ovarian cysts.	Pill use is ruled out if you have, or have had, blood clots, or inflammation in the veins, serious liver disease or unexplained bleeding from the vagina; also any suspicion of abnormal growth or cancer of the breast or uterus. You may need special tests to see whether you should take the pill if you have certain other conditions that could get worse using the pill. More detailed information about the risks of birth control pills and who should not use them is provided in the package insert that accompanies each package of birth control pills. It is essential that you read and understand this additional information.
INTRAUTERINE DEVICE	A small device of plastic. A clinician inserts the right type in a woman's uterus. Some IUDs can be left indefinitely, other types must be renewed periodically.	An IUD acts to change the lining of the uterus in some way so that it hinders a pregnancy from happening.	Of 100 women with IUDs, about 4 may become pregnant during a year of actual use. A woman's protection is increased if she checks the IUD placement regularly, or if the couple also uses foam or condom for a week about midway between periods.	With an IUD in place, a woman does not need to think about using her birth control method every day or every time she has sex.	Certain conditions may rule out use of IUDs. These include: certain abnormal conditions of the cervix, uterus or ovaries; an active or recent infection of the tubes or ovaries; very heavy periods or abnormal bleeding from the vagina; presence of anemia; possible pregnancy; or history of previous tubal pregnancy. A history of heart disease needs special evaluation and care with insertion because of chance of infection. Copper IUDs should not be used by women sensitive to copper, or women having diathermy (heat) treatments.
DIAPHRAGM	A soft rubber cup with a flexible rim around the edge. It's used with contraceptive cream or jelly.	It's inserted in a woman's vagina before intercourse. The diaphragm covers the entrance to the uterus, and the cream or jelly halts sperm movement.	Of 100 women using diaphragms, about 13 may become pregnant during a year of actual use. You may increase protection by checking that it covers the cervix every time you have intercourse.	Once it's learned, insertion is easy. It can be part of bedtime routine. Or it can be shared by both partners during love-making. Properly placed, it is not felt by either the woman or the man.	Diaphragm use is not recommended for women with poor muscle tone of the vagina, or those who have a sagging uterus, or vaginal obstructions.
CONDOM	A sheath of thin rubber or animal tissue. It is put on a man's erect penis before intercourse.	A condom collects a man's semen and keeps sperm from entering a woman's vagina.	Of 100 couples relying on condoms, about 10 pregnancies may occur during a year of actual use. When the woman uses foam at the same time, there is greater protection.	Condoms help protect against sexually transmitted diseases. They're a reliable and handy back-up or second method. They may help men with problems of premature ejaculation.	Just about any man who wishes to can use a condom. Men with sensitivity to rubber may be rare exceptions. Condoms may be purchased by men and women, and there are no age restrictions.
VAGINAL CONTRA-CEPTIVES	Foams, creams, jellies and suppositories are chemical substances inserted before intercourse that stop sperm but don't harm vaginal tissue.	One of these is inserted in a woman's vagina before intercourse. It spreads over the entrance to the uterus. It blocks sperm from entering the uterus, and the chemical halts sperm movement.	Of 100 women using a vaginal contraceptive, about 15 may become pregnant during a year of actual use. When the man uses a condom at the same time, greater protection is possible.	Easy to buy in drug stores. Easy to use. May offer some protection against certain sexually transmitted diseases.	Almost any woman who wants to can use a vaginal contraceptive.
FERTILITY AWARENESS WITH ABSTINENCE	Several ways of checking a woman's changing bodily signs are designed to help her discover the days each month when an egg is likely to be released.	Knowing the several days before, during and right after an egg is released lets a woman avoid unprotected intercourse during her peak fertility, to prevent live sperm from meeting the egg.	Among 100 women limiting intercourse by these methods, about 19 may become pregnant over a year of actual use. Keeping careful records can give better results.	No medication and little equipment is needed. Calendars, thermometers and charts are easy to get. These methods are acceptable to all religious groups.	Any woman in good health, who has been given careful instructions. Most successful users combine taking their temperature each day and checking vaginal mucus.

*Careful and consistent use of methods can give better results than rates reported in actual use for average users.

BEST COPY AVAILABLE

HOW THIS IS USED	POSSIBLE PROBLEMS	WARNING SIGNALS
Take your particular pills as directed. You're protected as long as you take them on time and don't skip any. If you see a doctor for some other reason, be sure to say you're on the pill. When you want to get pregnant, stop the pills. Use another method until your periods become regular. Normal cycles usually return in a few months, but a few women may have trouble getting pregnant for a while after pill use. After having a baby, get medical advice about when to go back on the pill, especially if you plan to nurse. You must have regular medical checkups while taking the pill.	Pill users have a greater chance than non-users of developing a few serious problems that may become fatal in rare cases. Such chances increase with age, and when certain other health problems are present. The risks are magnified by smoking more than 15 cigarettes a day; by conditions such as high blood pressure, high levels of bood fat, or diabetes; or by being about a third above ideal weight or 35 years of age or over. To learn more about possible problems with pill use, talk to your clinician, and read the pill package insert. Some minor reactions include breast tenderness, nausea, vomiting, weight gain or loss, and spotting between periods. These often clear up after two to three months of use. Combining the pill with other medicines such as antibiotics or drugs to control seizures may reduce the effectiveness of the pill in preventing pregnancy. Talk to your doctor about what to do.	Report immediately any of the following symptoms: unusual swelling or pain in the legs; yellowing of skin or eyes; pain in the abdomen, chest or arms; shortness of breath; severe headache; severe depression; eye problems, such as blurred or double vision.
Insertion is often done during menstruation because the opening of the cervix is softer. It may be somewhat painful, like bad menstrual cramps, but this is usually brief and goes away with a little rest and pain medication. A string on the IUD comes through the cervix into the vagina. You should feel for this now and then, especially after menstruation. It means the IUD is in place. You should have a checkup within 3 months, preferably soon after the first period following insertion. If pregnancy is desired, have the IUD medically removed.	Most women adjust with no problems. But the following may occur: Cramping may be greater, mostly for a while after insertion. Bleeding may occur between periods. Periods may be heavier and last longer. This is less so with copper or hormone types. And the device may fall out. If it's not noticed, pregnancy may result. Pregnancy with an IUD is rare, but if you think it's happened, have a pelvic exam promptly. If you *are* pregnant, the device should be removed soon. This lessens the chance of serious infection that in rare cases might threaten life. It also reduces chances of miscarriage or premature delivery. And if you choose abortion, it should be done early. IUD users have a higher risk than non-users of ectopic pregnancy. If that happens, surgery is required. Infection of tubes or ovaries is not common, but happens more often in IUD users than non-users. Women who had pelvic infection before, have never been pregnant, or have more than one sexual partner have greater chances of infection. Very rarely, infection may increase risk of tubal pregnancy, cause sterility, or require removal of reproductive organs. Infection that's not treated might become fatal. A puncture through the wall of the uterus is very rare, and usually happens during insertion. Copper types must be removed promptly by surgery. Other types probably should be removed.	Report any of these signs immediately: severe cramping or increasing pain in lower abdomen; pain during sex; unexplained fever and/or chills; increased or bad smelling discharge; not being able to feel the string; a missed period or a late or light period.
You must have the right size diaphragm prescribed for it to fit properly and work well. You will be shown how to put it in and take it out. Always use contraceptive cream or jelly with your diaphragm. And it must be in place every time you have sex. Check that the size needed is the same after a full-term pregnancy, or abortion or miscarriage beyond the first three months of pregnancy, or pelvic surgery, or weight gain or loss of 10 pounds or more.	Most women have no side effects. Some women who use a diaphragm are more prone to develop bladder infections. Occasional mild allergic reactions to rubber or cream or jelly may occur. Women with very short fingers may need to use an inserter. A diaphragm may become dislodged during sex if the woman is on top or has a relaxed vagina as a result of childbirth. Check the diaphragm for weak spots or pin holes from time to time by holding to the light.	Report promptly any discomfort when the diaphragm is in place, irritation or itching in the genital area, frequent bladder infections, or unusual discharge from the vagina.
Either partner may roll a condom over the erect penis. About one-half inch at the tip is left slack to catch semen. After climax, but before losing erection, the rim of the condom must be held against the penis as the man withdraws. That way, the condom can't slip and spill semen. Then it's thrown away. A fresh one must be used for each act of intercourse.	Rough handling may tear rubber. Care is needed in withdrawing. Some couples object to the condom because it interrupts lovemaking. However, the man or woman can put the condom on as part of foreplay. Some users claim feeling is dulled.	None.
Some are to be inserted not more than an hour before intercourse, others about 10 minutes before. Dosage quantities vary. Each product has directions on the package. A woman lies down or squats and gently inserts the product deep into the vagina. More must be inserted if sex is repeated.	No known side effect. In rare cases a woman or man may find these products produce a slight genital irritation. Changing brands may help. If not used exactly as directed, these products may not form a good barrier to the uterus. Some women complain of messiness or leakage.	None.
A woman's body temperature rises a little when an egg is released. Then it stays up until her next period. Her vaginal mucus increases just before an egg is released, and is clear and slippery. As it reduces in quantity it becomes cloudy and sticky, and may disappear. Every day, temperature must be taken and/or vaginal mucus checked, and records kept.	No bodily side effects to the user. Studies suggest there may be a slightly increased risk that a baby could have birth defects if an "aging" egg is fertilized. Care is needed in keeping records and interpreting signs. Illness or even lack of sleep can produce false temperature signals. Vaginal infections or use of vaginal products or medication may alter changes in vaginal mucus.	None.

BEST COPY AVAILABLE

Waging War On V.D.

William L. Yarber

Reprinted with permission from
THE SCIENCE TEACHER,
Volume 45, Number 5, May 1978.
Copyright by the
National Science Teachers Association
1742 Connecticut Avenue, NW
Washington, DC 20009

Even today, with widespread attempts to bring facts about the current VD epidemic before the public, venereal disease remains, for many people, a remote problem.

Statistics show, however, not only that VD persists as a major health threat in the U.S., but that it is taking an increasing toll on our young people. Though we are better at diagnosing VD, and curing it more quickly with antibiotics, we are a long way from controlling it. Gonorrhea, for example, ranks first among reportable[1] communicable diseases in the U.S., while syphilis ranks third (behind chickenpox). The virulence of the problem is demonstrated by the fact that an estimated 10 million people in the U.S. will be infected by VD in 1978, of whom *65 percent will be between the ages of 15 and 24.* [1,2,6,14,15]

Scope of the Problem

Gonorrhea and syphilis are only part of the problem. Though they are the most commonly known venereal diseases, they are but two of a host of infectious diseases now classified by public health personnel as "sexually transmissible diseases" (or STDs)—that is, diseases which are typically transmitted from person to person during sexual contact. STDs are caused by a variety of organisms, including bacteria, viruses, and fungi, which may invade virtually any moist mucous membrane of the body. [4, pp. 9-10] Though some STDs are quite common and easily treated, others are as yet incurable, and are especially dangerous for women and their unborn children, because of the difficulty of detecting many STDs in their early stages. [2] The instance and severity of various STDs are illustrated by the following facts:

- Gonorrhea infects 2.5 million people annually. Seventeen percent of women contracting gonorrhea (or about 200 000) will develop pelvic inflammatory disease; 25 percent of these will become sterile. In addition, a penicillin-resistant gonorrheal strain has been introduced into the U.S. Although this strain can now be cured with the antibiotic spectinomycin, it could eventually pose a serious health threat.
- Genital herpes, an incurable viral infection, affects at least one-half million persons annually, with about 30 percent of all active cases being new infections. Approximately 1000 babies die at birth yearly from this virus, and cervical cancer occurs eight times more often in women with genital herpes than in those never infected.
- Cytomegalovirus, another incurable viral infection, is a common disease *acquired by 80 percent of the population by age 40.* Twenty-five percent of all serious infant retardation and about 20 percent of infant cerebral palsy is attributed to congenital cytomegalovirus.[2]
- About 30 000 cases of late and latent syphilis and 1000 cases of congenital syphilis are reported annually.
- An estimated 2.5 million men are affected yearly by nonspecific urethritis.
- Nearly one-half of the 12 000 newborn infants infected yearly by sexually transmitted Group B streptococci die. A large number of those remaining suffer brain, sight, and hearing damage.

---

[1] "Reportable diseases" are those considered to represent a potential significant social threat; they are required to be reported to the official state health agency.

[2] Cytomegalovirus (CMV) is the least understood STD. It should also be noted that damage does not occur to 90 percent of fetuses infected by the virus.

Summary of the Most Important Sexually Transmissable Diseases in the U.S.

(Developed in cooperation with the American Social Health Association, Palo Alto, Calif.*)

Disease	GONORRHEA* (gon"o-re'ah)
Also Called	GC, dose, clap, drip
Cause	Bacterium: *Neisseria gonorrhoeae* ("gonococcus")
Incubation	Males: 2–8 days; Females: uncertain
Typical Symptoms	Pus discharge from penis; burning on urination; (women) pain in or around genitals or lower abdomen; occasionally no symptoms in males; about 80% of females have no early signs
Infectious	All stages
Diagnosis	Microscopic observation of discharge; culture from possible infection site
Treatment	Curable with antibiotics
Complications	Pelvic inflammatory disease; sterility, arthritis, blindness, meningitis, endocarditis, ectopic pregnancy; eye damage in newborns
Notes	Number 1 reportable infectious disease in U.S.A.; nearly 50 000 involuntary sterilizations in young women yearly; a strain resistant to penicillin has emerged

Disease	SYPHILIS* (sif'i-lis)
Also Called	Syph, pox, bad blood, lues
Cause	Spirochete: *Treponema pallidum*
Incubation	10–90 days
Typical Symptoms	First stage: painless chancre at site of entry (usually genitals). Second stage: rash, sores, hair loss, flu-like illness, swollen joints. Latent stage, no symptoms
Infectious	First and second stages, up to two years; pregnant woman may transmit for much longer period
Diagnosis	Blood test; microscopic slide from chancre
Treatment	Curable with antibiotics
Complications	Severe damage to nervous system or body organs possible after many years; brain damage, insanity, heart disease, death, blindness; severe damage to or death of baby
Notes	Symptoms may imitate those of other diseases; damage by spirochetes permanent; treatment of syphilitic pregnant woman before fifth month prevents damage to fetus

Disease	NON-GONOCOCCAL URETHRITIS* (non-gon"o-kok' al u"re-thri'tis)
Also Called	NGU, non-specific urethritis, NSU, gleet
Cause	Bacteria: *Chlamydia trachomatis; Mycoplasma hominis,* others(?)
Incubation	7–28 days
Typical Symptoms	Genital discharge, painful and frequent urination in male; discharge or cervical bleeding in females, although many do not show any symptoms
Infectious	Uncertain
Diagnosis	Microscopic observation of discharge; culture from possible infection site; blood tests
Treatment	Curable with tetracycline, erythromycin, sulfonamide
Complications	Uncertain; infection of male's bladder or prostate gland; female sterility; *chlamydial*-caused eye infection in newborn infant
Notes	May be inaccurately diagnosed as drug-resistant gonorrhea; does not respond to penicillin; less well-defined in females; as prevalent as gonorrhea; some cases may spontaneously cure themselves

Disease	HERPES SIMPLEX GENITALIS* (her'pez)
Also Called	Herpes genitalis, herpes, HSV-2, genital herpes
Cause	Virus: *Herpes virus hominis,* Type 2
Incubation	2–20 days
Typical Symptoms	Minor genital rashes or itching at first, developing into painful blister-like, fluid-filled lesions or sores, with flu-like illness and swollen lymph glands
Infectious	During active flare-up when lesions are present
Diagnosis	Pap smear, examination, culture
Treatment	None considered completely safe or effective; treatment for pain and ointments for sores are used
Complications	Women with HSV-2 of cervix are eight times more likely to develop cervical cancer (no cause and effect established); secondary infection during active stage; spontaneous abortion, premature delivery; meningitis in baby acquired during birth, infant death at birth
Notes	Cannot be cured—person may have recurrences of lesions throughout life; only 30% of active cases are new infections

Disease	CYTOMEGALOVIRUS* (si"to-meg"ah-lo-vi'rus)
Also Called	CMV
Cause	Virus: *Cytomegalovirus* (herpes family)
Incubation	Uncertain
Typical Symptoms	Fever, swollen glands, and sore throat in adults; disease may be CMV mononucleosis; few or no symptoms in most adults; signs of nervous system damage in babies
Infectious	Uncertain; pregnancy
Diagnosis	Lab test of blood serum; culture test
Treatment	No known cure
Complications	Usually not harmful to adults; severe birth defects (e.g. mental retardation, blindness, deafness) in infants
Notes	Most important viral cause of mental retardation; 25% of all serious infant retardation and cerebral palsy is caused by congenital CMV; acquired by 80 percent of the population by age 40; responsible for about 10 percent of adult cases of mononucleosis; no damage in 90 percent of infected fetuses

Disease	GROUP B STREPTOCOCCUS* (strep"to-kok'us)
Also Called	
Cause	Bacteria: *Beta hemolytic streptococcus*
Incubation	Varies from days to weeks in young children
Typical Symptoms	Most adults do not show symptoms
Infectious	Uncertain; pregnancy
Diagnosis	Lab culture from possible infection site
Treatment	Curable with antibiotics
Complications	No particular complications in adults; high death and incapacitating rate in infected infants
Notes	Maternal infection fairly common; estimated attack rate of 3 to 4 per 1000 live births. About 50% of 12 000 annually infected newborn infants die from disease—many survivors suffer damage to brain, sight, and hearing

Disease	TRICHOMONIASIS* (trik"o-mo-ni'ah-sis)
Also Called	Trich, TV, vaginitis
Cause	Protozoan: *Trichomonas vaginalis*
Incubation	4–28 days
Typical Symptoms	Female: heavy, odorous vaginal discharge, vaginal itching or soreness, burning urination. Male: slight discharge and painful urination. Usually produces symptoms in females but rarely in males
Infectious	Always
Diagnosis	Microscopic slide of discharge; culture; examination
Treatment	Curable with Flagyl
Complications	Does not lead to severe organ damage; chronic inflammation and resulting damage to cervix may predispose tissue to cancer
Notes	Costly in terms of increased health care expenses and time loss from work or school; approximately 3 million cases annually

Disease	CANDIDIASIS* (kan"di-di'ah-sis)
Also Called	Moniliasis, vaginal thrush, yeast

Cause	Yeast or fungus: *Candida albicans*
Incubation	Uncertain
Typical Symptoms	Female: odorous, cheesy vaginal discharge, itching. Male: possibly urethritis. Infants: patchy sores in mouth and diaper areas
Infectious	Uncertain
Diagnosis	Microscopic slide and culture from possible infection site
Treatment	Local treatment with Nystatin
Complications	Not significant except in rare cases; secondary infections; oral infections in infants
Notes	Many people have organism without developing disease; antibiotic therapy, other bacterial infections, poor nutrition, diabetes, pregnancy, use of birth control pill, for example, may trigger infection
Disease	HEPATITIS B (hep"ah-ti'tis)
Also Called	Serum hepatitis, Australian antigen hepatitis
Cause	Hepatitis B virus
Incubation	2–5 months
Typical Symptoms	Fever, loss of appetite, tiredness, jaundice; none specific to this disease; many persons are asymptomatic
Infectious	Uncertain
Diagnosis	Lab test of blood serum
Treatment	None known to be effective; most cases recover eventually without treatment
Complications	Severe illness; death possible; severe liver damage
Notes	Penile-oral or penile-anal transmission appears to be most common
Disease	PEDICULOSIS PUBIS (pe-dik'u-lo'sis pu'bis)
Also Called	Crabs, cooties, lice
Cause	Louse: *Phthirus pubis*
Incubation	Begin to multiply from infestation
Typical Symptoms	Intense itching, pin-head blood spots on underwear; eggs or nits on pubic hair
Infectious	Uncertain
Diagnosis	Examination
Treatment	Insecticide lotions, creams, and soaps; cleaning bed linen or clothing
Complications	None
Notes	Very common
Disease	SCABIES (ska'be-ez)
Also Called	Itch
Cause	Mite: *Sarcoptes scabiei*
Incubation	4–6 weeks
Typical Symptoms	Intense itching; raised gray lines where mite burrows
Infectious	Uncertain
Diagnosis	Examination
Treatment	Same as pediculosis pubis
Complications	May infect hands, elbows, breasts, and buttocks as well as genitals
Notes	Very common
Disease	VENEREAL WARTS*
Also Called	Genital warts, condylomata acuminata
Cause	Virus
Incubation	Unknown
Typical Symptoms	Local irritation, itching, warty growths around genital and anal areas
Infectious	Uncertain
Diagnosis	Examination
Treatment	Caustic chemicals or surgery
Complications	May spread enough to interfere with birth passage; may spread to newborn
Notes	Very contagious

Pronunciations from: *Dorland's Illustrated Medical Dictionary*.

* = can be transmitted to babies before, during, or shortly after birth

[a] Chart sources were Chiappa, Zarate, Knox, The National Institute of Allergy and Infectious Diseases (see references at end of article), and Rodgers (see footnote to STD Quiz)

Clearly, if we are to make a dent in statistics like those above, we must educate young people to the dangers of STDs, and we must do this as soon as they reach puberty. [7]

We know that today's young people are sexually active—an estimated one-fifth of 13 and 14 year-olds and more than one-half of 15 to 19 year-olds are believed to have had sexual intercourse [3, 13]. And while teachers cannot be expected to curb sexual activity, they can inform students about STDs, encourage them to adopt mature attitudes and preventive measures, and tell them where to seek treatment. [8]

The remainder of this article will offer suggestions for incorporating VD education into the classroom. Most previously developed educational materials are outdated. Therefore, a quiz and a summary table of important information related to STDs are also included.

As you read over the following recommendations, keep in mind the two major outcomes for which STD education is aiming: first, that young people will adopt actions or modify their behaviors so as to minimize or prevent infection; and second, that persons who do contract an STD will recognize the symptoms and seek professional medical care.

Here then are suggestions for incorporating STD education into the classroom:

Educating to Make a Difference

1. *Involve parents, school officials, and students.* Though teachers will want to develop the specifics of the curriculum, parents, school officials, and students can provide valuable guidance and support for a potentially controversial program.[3] [16, p. 3] Most recent surveys have revealed that a strong majority of parents support VD education in the schools. Surveys also show that such education is offered in small rural communities as well as in large urban areas. [3, 5, 10, 14] At least one national survey, however, cited community resistance in 39 percent of schools sampled as an obstacle in setting up a VD curriculum. [10]

I have found the "STD Quiz" particularly helpful, both as a classroom learning tool and as a way to assess the needs of parents, schools, and students.

2. *Introduce curriculum in middle or junior high school.* Both the statistics on sexual activity of young people and the high VD rate in secondary school-age students suggest that STD education should begin at puberty. In fact, the National Commission on Venereal Disease has recommended that "education about the venereal diseases be introduced in the curriculum of public, parochial, and private schools no later than the 7th grade. . . ." [12, p. 20] (Some Washington, D.C. schools have started VD education as early as the fourth grade, because local clinics have had patients of that age [12, p. 20].)

---

[3] The author has developed a survey questionnaire to assess parent, student, and administrator viewpoints on secondary school STD education. Copies are available upon request to him.

3. *Teach the STDs as communicable diseases.* STD instruction should be incorporated into a unit on communicable diseases rather than taught as part of sex education. STDs are caused by germs, not sex. Though sexual contact is the typical mode of transmission, it is possible—though rare—to develop an STD without having had sexual relations. There is also some concern that by including discussion of STDs in sex education classes, one risks creating negative attitudes toward sex in young people. In addition, if STD education were included only in a sex education unit, it would be lost to those schools which forbid sex education.

4. *Do not overwhelm students with facts.* Though overcoming ignorance is a major goal of STD education, teachers should be careful not to overwhelm students with too much information. A three- to five-hour unit is usually adequate. Instruction should center on six major aspects of the problem:

- Types of STDs prevalent in the U.S.
- Who can get STDs
- How STDs are contracted
- How a person knows he or she has an STD
- How STDs can be prevented
- Where to go for treatment

5. *Restructure attitudes toward STDs.* Efforts to control sexually transmitted diseases are still hampered by social stigmatization of affected persons. Persons contracting an STD often feel fear, shame, and guilt, which may result in delayed treatment and a reluctance to reveal sexual partners; this makes it difficult to trace and treat other affected persons. During instruction STDs should be treated like any other physical illness. Information should be presented in a matter-of-fact, objective, and non-moralistic fashion.

6. *Promote discriminate sexual behavior and social responsibility.* As teachers have learned, they cannot realistically expect to affect the sexual habits of their students. In fact, preaching sexual abstinence as the only way to avoid infection may well "turn-off" some students to learning. A more sensible approach is to promote discrimination in sexual behavior. [11, p. 37] Teachers can point out that the more sexual partners a person has, the greater the chance of being infected. They can also discourage students from having sex with those whom they do not know well or who would be likely candidates for an STD. Preventive measures should be underscored. (The teacher should check school policy concerning instruction about contraceptive techniques.)

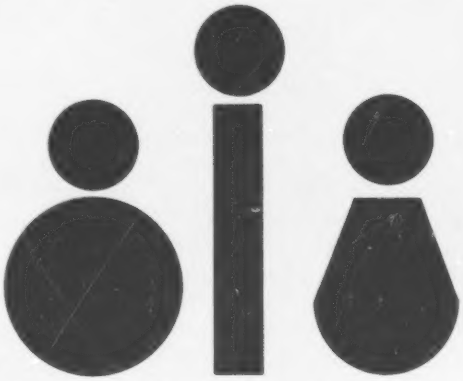
Teachers should also emphasize that an infected person displays social responsibility by refraining from sexual activity and getting partners to a VD clinic.

7. *Use student-centered learning activities.* STD education should feature a variety of student-centered experiences, in addition to the typical lecture-question-answer format. As much as possible, education should occur in a coed setting. [16, p. 4] Activities such as role playing, values clarification, case studies, and problem-solving are especially useful. Above all, activities should be conducted in an open, relaxed, "safe" environment, where students feel free to express their true feelings and opinions.

There are experts who claim that the only way we will finally eradicate venereal disease is by developing preventive vaccines. Until that time arrives, if ever, the best protection we can give our young people is to educate them to the dangers of STDs. The problem can no longer be ignored.

References

1. American Social Health Association. "Incidence Trends—Syphilis and Gonorrhea." *VD News* 1:1,12; June 1976.
2. American Social Health Association. *Body Pollution*. Palo Alto, Calif. (Undated leaflet).
3. American Social Health Association. *Today's VD Control Problem 1975*. Palo Alto, Calif. 1975.
4. Chiappa, J. A. and J. J. Forish, *The VD Book*. Holt, Rinehart, and Winston. New York, N.Y. 1976.
5. Connecticut Child Welfare Association, Inc. *Parental Attitudes Toward Venereal Disease*. Hartford, Conn. 1975.
6. Knox, S. *VD Quiz: Getting the Right Answers* (student text). American Social Health Assocation, Palo Alto, Calif. 1977.
7. Ohio Department of Health and Ohio Department of Education. *Venereal Disease Education: Teacher's Resources*. Columbus, Ohio 1976.
8. Schwartz, W. F. "Some Pragmatic Considerations in Venereal Disease Education." *Journal of School Health* 33: 164-170; April 1963.
9. *Sexually Transmissible Diseases*, National Institute of Allergy and Infectious Diseases, U.S. Government Printing Office, Washington, D.C. 1976.
10. Sgori, S.M. "Parental Resistance to Effective VD Education: Fact or Fancy?" *VD News* 1:1-2; January 1976.
11. Snegroff, S. "Venereal Disease Education: Facts Are Not Enough." *Journal of School Health* 45:37-39; January 1975.
12. Stashower, Gloria. "VD Education: Efforts and Achievements." *School Management* 18:20-23; February 1974.
13. The Alan Guttmacher Institute. *11 Million Teenagers*. New York, N.Y. 1976.
14. Yarber, W.L. "Venereal Disease Education and a Selected Group of American College Students." *British Journal of Venereal Diseases* 53:58-62; February 1977.
15. Young Drug Products Corporation. "Gonorrhea Up, Syphilis Down, VD Epidemic Continues High." *Sex Care Digest*. September 1977.
16. Zarate, L. *VD Quiz: Getting the Right Answers* (teacher's manual). American Social Health Association, Palo Alto, Calif. 1977.



STD Quiz*

True or False

1. *Syphilis and gonorrhea are the only serious venereal diseases in the U.S.*

FALSE. Scientists now classify many diseases as transmissible through intimate sexual contact. Hence, a new term has evolved: sexually transmissible diseases, or STDs. Many STDs are quite common—for example, genital herpes affects at least one-half million persons annually; trichomoniases (trich) occurs in approximately 3 million cases yearly; nonspecific urethritis affects an estimated 2.5 million men annually; and cytomegalovirus (CMV) is contracted by 80 percent of the population by age 40. Other common STDs are: candidiasis (yeast, moniliasis), hepatitis B, Pediculosis pubis (lice, cooties), scabies (itch), venereal warts, and Group B streptococcus.

2. *Teenagers and young adults account for most STD incidence.*

TRUE. About 65 percent of STD incidence occurs in the 15 to 24 age group.

3. *The signs of an STD often go hidden or unnoticed.*

TRUE. Because of the external nature of their sex organs, males are more likely than females to detect an STD; males, therefore, typically represent an "early warning system" for medical care and for notifying female contacts. But the signs of an STD can often be hidden, unnoticed, or absent in both men and women. In this case, notification that an STD may have been contracted would probably come from an infected partner. The first sign of an STD may be a sore, burning or uncomfortable urination, drip or ooze from sex organs or eyes, persistent itch, or swollen glands. Later signs, which may appear anywhere on the body, can include a rash or blotches, a sore, abdominal pains, swollen glands, or hair loss.

4. *Once the signs of an STD disappear, the person is cured.*

FALSE. Occasionally, some STDs spontaneously cure themselves. In the vast majority of cases, however, the germs remain present in the body—even though visible symptoms may disappear—and may cause permanent damage.

5. *STDs can be transmitted only via genital contact.*

FALSE. Almost any mucous membrane or body opening can be susceptible to an STD infection. Some STDs (for example, syphilis, genital herpes) can enter the body virtually anywhere, particularly if the skin is broken.

6. *One cannot get an STD without having sex relations.*

FALSE. Many STDs can be transmitted without sexual contact, although this is not common. For example, scabies or crab lice may be acquired by sleeping in contaminated bedsheets or via sexual foreplay; syphilis, by skin-to-skin contact if the chancre is present. A lab technician working with STDs can become accidentally infected through a skin cut, and thousands of babies are born yearly with an STD. Other factors, such as emotional tension, drug use, or pregnancy, can also trigger a genital infection. Herpes infections are found even in celibates.

7. *A sexually active person can reduce the likelihood of contracting an STD.*

TRUE. Abstinence and fidelity are the best ways to avoid STDs. The more people with whom a person has intimate contact, the greater the risk of exposure. Though no method is fail-safe, a sexually active person can reduce the chances of getting an STD by not having sex with persons not well known, or potentially infected with an STD; by using a condom, or a contraceptive such as foam, cream or jelly; by douching after intercourse; by looking for sores or discharge and washing exposed areas after contact; and by urinating after contact.

8. *All STDs can be cured.*

FALSE. If detected soon enough, most can be cured fairly easily and without after effects. However, STDs caused by viruses—such as genital herpes and cytomegalovirus—are incurable. A person with an STD should be treated as soon as possible before any permanent damage results (for example, sterility, insanity, blindness, arthritis, or heart disease). A person with an STD should not try to cure himself or herself. Only a physician can administer the proper tests and prescribe the right drugs.

9. *A minor can be examined and treated for an STD without parental consent.*

TRUE. Every state in the U.S. now permits minors to be examined and treated for an STD without parental or guardian knowledge or consent. In some states, the law applies to persons 12 years of age and over; in others it is 14 years of age. To find out your state's laws, to acquire more information about STDs, or to learn of the closest free and confidential VD clinic, call, toll-free, the national VD Hotline, Operation Venus, at 1-800-227-8922 (in California, 1-800-982-5883).

10. *A person is required to name his or her sexual contacts when being treated for an STD.*

FALSE. One is not required by law to name sexual contacts. However, a person would be helping greatly to control STDs by getting infected persons to treatment. Individuals should give the names of their sexual partners to the physician or public health officer, or take them to the clinic as soon as possible.

11. *A person can have more than one STD at a time, and can get a particular disease more than once.*

TRUE. A person can have more than one STD at a time, and treating one may not get rid of the others. Also, a person can be reinfected several times.

12. *The primary victims of the STDs are women and unborn or newborn babies.*

TRUE. STDs can pose greater danger to females than to males, since the early symptoms are not obvious in females. Females and babies, therefore, run a greater risk of medical complications from a prolonged infection.

13. *A person who contracts an STD is "bad."*

FALSE. A person who contracts an STD is ill, not bad.

---

*Major sources of information for this quiz were Chiappa and Knox (see References). Also Rodgers, J. "The Dark Side of Intimacy." *Ladies Home Journal*, 1976.

Dispelling Myths About Female Potential

Ethel Sloane

Reprinted with permission from
THE SCIENCE TEACHER,
Volume 47, Number 7, October 1980.
Copyright by the
National Science Teachers Association
1742 Connecticut Avenue, NW
Washington, DC 20009

Jennifer Walters is a criminal lawyer in Los Angeles. She is bright, well-dressed, and she carries an attache case. She is also a comic book "super-hero." When disaster strikes, when tragedy is to be averted, Jennifer's dress-for-success pants suit shreds on her body, and she turns into a two-meter tall, bright green, incredibly strong Savage She-Hulk!

Arriving on the comic book stands in late 1979, the Savage She-Hulk joined star-spangled Wonder Woman and intrepid Spider Woman, the only other superfemales currently to star in their own comic books. But there is something different about the She-Hulk. Of course, she still has the skimpy costume, wild hair, and flaring nostrils of the stereotyped comic-book sex goddess. Jennifer, however, is a powerful *hulking* sex goddess—she has visible muscles. She is also definitely a feminist. In her normal state she is an intelligent, strong-willed attorney—not a traditional nurse, secretary, or dumb Lois Lane-type reporter. And when she turns green and bursts into a muscular hulk, she is allowed to be assertive and strong as iron.

Jennifer's transformed state, despite its stereotypical baggage, may be seen to reflect society's recently changing attitudes about woman's body. Perhaps one reason the She-Hulk gets to exercise her body as well as her mind is because women in the past decade have been encouraged to become more aware of the inside and outside of their bodies, to learn to appreciate their own capabilities as *individuals* and to realize that they may express both physical and intellectual strength without having to worry about compromising their attractiveness and femininity.

She-Hulk's Message

The incredible She-Hulk's message—that women can be strong, masterful, and competent rather than weak, submissive, and emotional—is a welcome change, even if couched in comic strip form, and the importance of exposing the public to ideas like these should not be underestimated.

Historically, women have not received these kinds of messages. Society has long been telling them what they could not, or should not, be doing because of presumed physiological and psychological differences from men. Only recently, and largely under the impetus of the women's movement, has there been any recognition that such presumed differences—and even some physical differences—between the sexes are less significant than are *individual* differences. We are, each of us, unique, differing from one another in size, shape, stature, aptitude, and capacity. And the degree to which any two men or any two women differ from each other in these qualities can be far greater than the degree of difference between a man and a woman.

As women continue to move into the labor force, many to occupy jobs that have always been perceived as male, the old stereotypes about the social roles of men and women have become increasingly dysfunctional. There are no physical, intellectual, or psychological differences in women that prevent them from working in any occupation they choose, no matter how traditionally "male" that job or profession has been regarded.

Of course, not everyone is ready to believe that. A woman's physical and intellectual potentialities have long been linked to her reproductive capacity. It is her nature, says the traditional view, to behave in an innately "feminine" way, and to confine herself to a maternal, nurturing role. In Freud's words, woman's anatomy has created her destiny.

Moreover, the very organs that give a woman her childbearing capacity are mostly internal and hidden from view. In contrast to the male, whose reproductive organs are exposed, a woman's cervix, uterus, fallopian tubes, and ovaries are not readily visible—a fact that underlies notions of how vastly "different" women are.

For countless centuries, the mystique of female anatomy, and more specifically the female reproductive tract, has given rise to a vast amount of romanticizing and misinformation. Indeed, a large part of today's beliefs about women's abilities, physiology, and behavior stems from fallacies based on early beliefs. I will endeavor in this article to look at some of these myths and fallacies, from early times to the present, and will then turn to some recent research on female physiology. Unfortunately, as will be seen, though early misunderstandings seem absurd, our current ignorance remains profound.

Fanciful Notions

Evidence from medical records indicates that the uterus was the most fancifully and erroneously described of female organs by ancient physicians. One of the more frequently recurring characterizations is that of the uterus as an independent animal, free in the abdomen, and with a mind of its own. The Ebers papyrus, for example, discovered in a tomb in Thebes where it had lain for nearly 3500 years, tells us that the animate uterus could be attracted to its proper place for treatment by the scent of burning turpentine and dried excrement placed under a standing woman. [10]

Hippocrates (460-377 BC) claimed that the uterus went wild unless it was fed often with male semen; and in the second century AD, a Greek physician wrote that the uterus "delights also in fragrant smells and advances toward them, and it has an aversion to fetid smells and flees from them; and on the whole, the womb is like an animal within an animal." [10]

This notion of a feral uterus with an over-developed olfactory sense was eventually replaced with descriptions just as inaccurate but perhaps even more ingenious. A famous French surgeon in the 14th century, for example, judged female anatomy a poor second to the obviously superior male architecture because, as he put it, the female parts were simply the male parts inverted! "The uterus is like a penis turned inside out," he wrote. "It has in its upper part two arms with the testicles . . . like the scrotum." He further likened the body of the uterus, with a canal running through it, to the shaft of the penis with the urethra in it. [10]

As stated, misconceptions about women's internal organs originated as a result of the organs' inaccessibility. Modern human anatomy was not really founded until dissection of human cadavers became legal in the 16th century—and specifically not until the publication of *De Humani Corporis Fabrica* ("On the Structure of the Human Body") by Andreas Vesalius. (Vesalius, incidentally, caused a sensation with his demonstration that men and women have equal numbers of ribs.)

Mystique Lingers

But it was nearly 400 years after Vesalius and the reproductive anatomy of the human female was known before reasonably accurate knowledge about her reproductive physiology became available. The human ovum, for example, was not discovered until the late 19th century, and the uterine menstrual cycle not described until the turn of this century. It took us several more years to recognize the correlation between whatever is going on in the uterus and what is occurring in the ovaries. Ovarian steroids and pituitary gonadotropins were identified only 50 years ago, and the discovery that the hypothalamic region of the brain secretes hormones that control pituitary secretion is only 20 years old.

Given that accurate information about the structure and function of women's bodies has been so scant, it is not surprising that old fallacies linger or that new ones are born and continue to proliferate. Certainly, no one today really believes, as did the ancients, that a menstruating woman can blight crops, curdle milk, sour wine, wilt flowers, or unleash floods or tornadoes. But how many have heard that at the time of menstruation, a hair permanent or tint won't "take," that a girl should be excused from school sports, or that a woman is more vulnerable to colds?

Of course no one today thinks, as did Victorian physicians, that menstruation may cause temporary insanity and that some women may go berserk, attacking their friends or even murdering their husbands or children. But within the past decade, a Washington, D.C. physician made headlines when he suggested that "raging hormonal influences" make women unsuitable for top executive jobs. A female President is out of the question, said he, since she could hardly make decisions affecting public life and safety when under extreme hormonal influences. Evidently overlooking the way some decisions made by male chief executives have affected our lives and safety in the past decade, this doctor believes, like his Victorian counterparts, that women are periodically deranged.

And only last year, a brochure printed by the Royal Society for the Prevention of Accidents in Great Britain warned women not to drive an automobile on long journeys for the eight days before and after the start of their menstrual periods—an edict certain to make life more difficult for female commuters. Written by Dr. Katherina Dalton, a British physician and authority on "premenstrual tension," the pamphlet says that women (not some, but all women) should "understand, recognize, and sensibly adjust their lives" around the menstrual cycle; that they are more than twice as likely to have an accident during the paramenstruum; and that at this time a woman is at her lowest ebb, with "increased irritability and aggression, duller mental and physical ability, tense, irrational, impatient, and more easily tired." Dr. Dalton, who has written extensively on what she terms "the curse of Eve," has recently published another book called, *Once a Month*, summarizing 30 years of her research. She links extreme behaviors—child abuse, suicides, psychiatric episodes, prostitution, alcoholism—to the period eight days before and after the onset of menstruation. Dr. Dalton's evidence to support her hypothesis is, in my opinion, somewhat specious and certainly inconclusive; in fact, the extent to which premenstrual tension exists or affects large numbers of women is still speculative. [8] Nonetheless, the benefit of such claims to the Royal Society is certain: After all, getting half the drivers off the highways for sixteen days out of the month is certain to prevent accidents!

In addition to continuing pronouncements about woman's emotionality and lack of competence, there have been others focused on her physical abilities . . . for example, the comment by U.S. Chief Justice Warren Burger during a Supreme Court argument: that because of innate superior manual dexterity, women make the best secretaries. Or the warning by a Chicago physician that jogging is inadvisable for women because it damages the muscle and connective tissue in the pelvic area. And we have all heard the exercise and sports myths—that vigorous activity gives women unsightly muscle bulges so that they end up looking like a smaller Arnold Schwarzenegger; that exercise damages the reproductive system, adversely affects menstruation, causes uterine problems, and makes it harder for a woman to conceive and deliver a child; and last, but not least, that bouncing and jiggling of the breasts during exercise will cause them to become stretched-out and saggy.

Yet there is no conclusive evidence to substantiate any of the above notions. None, whether made by a doctor, lawyer, or teacher, has yet been verified by scientific investigation; there is, in fact, a large body of data to refute them. But belief in them has denied women equal occupational opportunity and prevented them from making their maximum contribution to society; has tended to keep them sedentary, thereby depriving them of the health and recreational benefits of vigorous exercise or competitive sports; and, even worse, has damaged women's self-esteem.

It is essential that we, as educators, dispel myths, and that we teach our students to question traditional assumptions about women's bodies and minds in light of current and growing knowledge on human female structure and function. Which leads me to the next section of this paper—some current knowledge that will help to demystify female physiology and counter misinformation.

Increased Understanding

In the last decade, largely as a result of technical advances, a vast body of new knowledge encompassing all the events of female reproductive physiology, from menarche through menopause, has arisen. The material following will highlight a few areas that have been studied most extensively and in which knowledge is progressing most rapidly.

Hormone and Target Cells

The hormones involved in the regulation of reproduction, like all hormone secretions of endocrine glands, control the activities of their target cells. There has been extensive investigation of the mechanisms by which hormones provide this control function, and E.M. Sutherland received the Nobel Prize in 1971 for proposing how a protein hormone's message is transmitted at the cellular level.

Compared with other biologically active substances, such as glucose, for example, hormones circulate in the body fluids in very low concentrations. The target cells on which they act must have some way of recognizing, receiving, and retaining the hormone as it passes by in the blood capillaries. Receptor sites for a specific hormone, located on or in the target cells, announce the hormone's arrival to the area of the cell that is involved in the response. If the hormone is a protein or polypeptide, the molecules are too large to enter the cells. Accordingly, the receptors are located on the cell surface, and unite with the hormone, called the first messenger. The hormone-receptor combination activates an enzyme within the cell membrane called adenyl cyclase. Adenyl cyclase in turn causes the conversion of ATP to cyclic AMP, the second messenger.

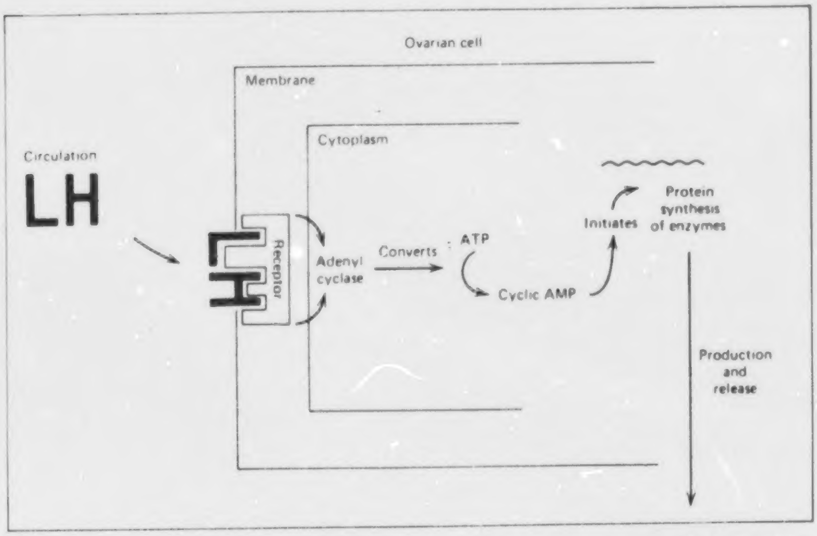


Figure 1. The cyclic AMP mechanism by which protein hormones exert their action. A stimulating protein hormone, such as LH, unites with a specific receptor at the cell membrane of an ovarian cell. The combination of hormone and receptor activates adenyl cyclase which causes the conversion of ATP to cyclic AMP within the cytoplasm. Cyclic AMP, called the second messenger (because the original stimulating hormone is the first messenger), initiates cellular activities which lead to estrogen release. (Reproduced, by permission, from *Biology of Women* by Ethel Sloane, p. 58, © 1980, John Wiley & Sons, Inc.)

In some as yet unknown way, cyclic AMP is able to cause any number of cellular activities. If the cell is in the ovary, testis, or adrenal cortex, cyclic AMP initiates the process of steroid hormone formation.

When a steroid hormone circulating in the bloodstream reaches its target cells, the mechanism for action is somewhat different. Steroid molecules are small enough to diffuse across cellular membranes, and they bind with intracellular receptors specific for that particular steroid. When estrogen arrives at a tissue that contains cytoplasmic estrogen receptors—such as the uterus, for example—the estrogen drifts across the endometrial cell membranes to bind to the receptor protein. The estrogen-receptor complex then crosses the nuclear membrane, and interacts with an acceptor site of the DNA molecule. The interaction of hormone-receptor and DNA initiates protein synthesis, in this case resulting in uterine endometrial growth.

New Techniques in Hormone Measurement

A more complete understanding of the endocrine events associated with the menstrual cycle became possible with the introduction of the radioimmunoassay (RIA) technique in 1960 (for which Rosalyn S. Yalow received the Nobel Prize in 1977). Until then, measurements of pituitary and gonadal hormones were made by biological assays, which are relatively reliable, but time-consuming and expensive to perform, since the method requires a day or more wait and destruction of the test animals.

Radioimmunoassay uses radioactive isotopes to label or "tag" an antigen-antibody complex, which is then measured for radioactivity with a scintillation counter. For example, a known quantity of antibody to a pituitary hormone is mixed with a sample of that hormone (antigen) derived from the blood or urine and also with a known amount of radioactive hormone. The mixture is then incubated. Since both labelled and unlabelled hormone compete for the active binding sites of the antibody, the amount of labelled hormone-antibody complex formed is a function of the hormome concentration of the sample. The RIA technique is capable of detecting physiological substances present in body fluids in the billionth of a gram (nanogram) or trillionth of a gram (picogram) range. Thus, control of pituitary gonadotropins and steroids during normal and abnormal function can be studied by RIA, and the method has been extensively utilized for research and clinical investigations.

Hypothalamic-Pituitary-Ovarian Axis

The menstrual cycle is the result of fluctuations of the hormones from three endocrine sources: the hypothalamus, the anterior pituitary gland, and the ovaries, generally referred to as the hypothalamic-pituitary-ovarian axis.

The highly complex and intricate interaction between these three sources is based on both positive and negative feedback mechanisms. Both the hypothalamus and the pituitary gland are sensitive to the gonadal steroids: estrogen and progesterone—an effect called the long feedback loop. There is evi-

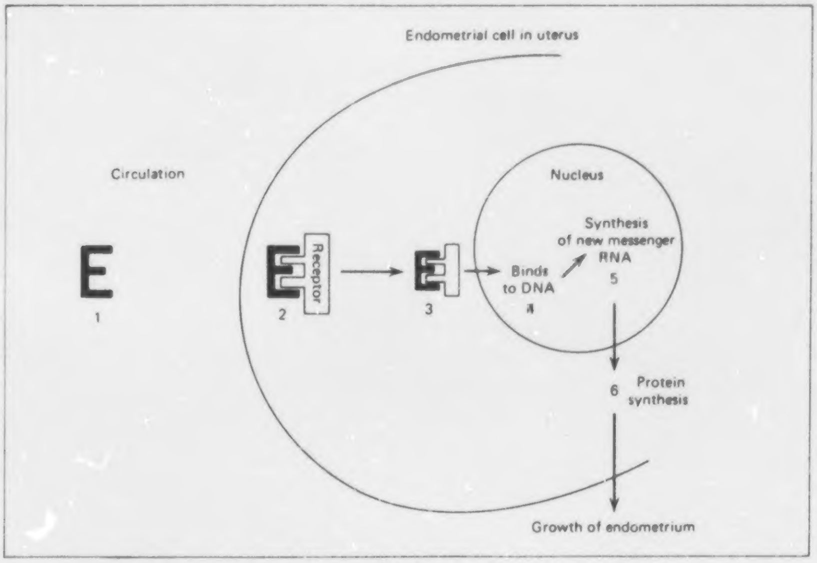


Figure 2. Mechanism of action for steroid hormones. The steroid estrogen (1) diffuses across the cell membrane and binds with a cytoplasmic receptor (2). In transit to the nucleus, the estrogen-receptor complex becomes a smaller molecule (3) which enters the nucleus and binds to nuclear DNA (4), activating specific genes to form messenger RNA (5). The mRNA passes into the cytoplasm to result in protein synthesis. (Reproduced, with permission, from *Biology of Women* by Ethel Sloane. p. 59, © 1980, John Wiley & Sons, Inc.)

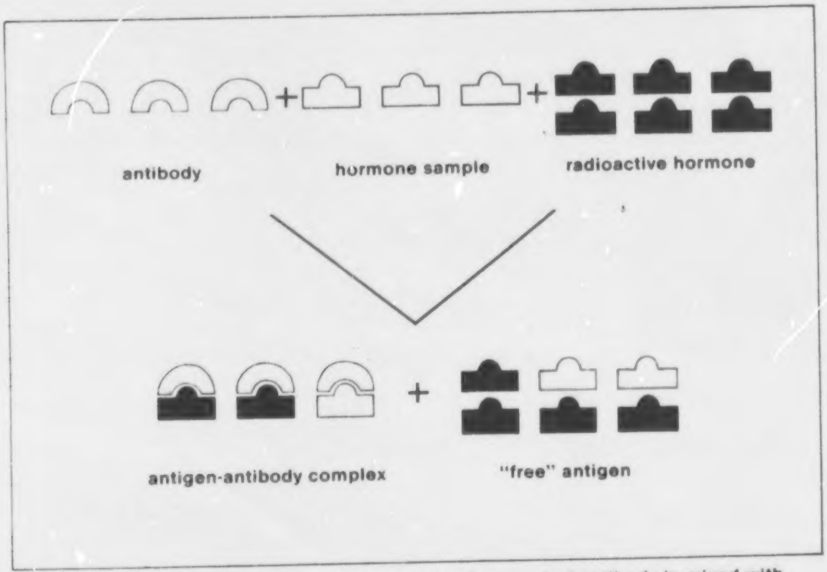


Figure 3. The radioimmunoassay technique. A fixed amount of antibody is mixed with an unknown amount of hormone and a known amount of radioactive hormone. The unlabelled nonradioactive hormone competes with the radioactive hormone for attachment to the antibody binding sites.

dence that the releasing hormone areas of the hypothalamus can be inhibited by the pituitary gonadotropins, a mechanism called the short feedback loop. The ultrashort feedback loop refers to the inhibition of the hypothalamus by its own product, the releasing hormone. As if the relationships were not already complicated enough, stimuli from higher brain centers in the cerebral cortex can apparently be transmitted to the hypothalamus to influence menstrual function. So emotional distress, reaction to a strange environment, or concern over a possible unwanted pregnancy can cause delay or cessation of monthly periods.

Hormones and the Monthly Cycles

Most of the endocrine events of the reproductive cycle are already familiar. They are the result of processes that start during fetal life, actively continue during childhood, puberty, adolescence, and the reproductive years, and finally terminate in menopause, when the total number of ovarian follicles is nearly exhausted.

At birth, the ovaries of a female baby contain a fixed number of primordial follicles from which develop all of the ova she is destined to produce throughout her reproductive life. At puberty, there is a pool of fifty thousand to several hundred thousand follicles, each consisting of a primary oocyte arrested in meiotic division, surrounded by a single layer of granulosa cells. Only one ovum is ovulated each month—a total of approximately 400 from puberty to menopause.

At the beginning of a monthly cycle, the hypothalamus of the brain influences the pituitary production of gonadotropins by the release of luteinizing hormone-releasing hormone (LH-RH). LH-RH causes the release of follicle stimulating hormone (FSH) and luteinizing hormone (LH) from the pituitary gland. There has been some controversy regarding the existence of more than one gonadotropin releasing hormone, but it is generally accepted at this time that LH-RH results in both FSH and LH release. Primarily under the influence of FSH at first, a group of ovarian follicles is stimulated to steadily grow. FSH causes the mitotic proliferation of granulosa cells, and induces the transformation of the surrounding ovarian connective tissue into a theca interna, containing clumps of steroid-secreting cells and a capillary network. Although FSH is responsible for initial follicle growth, LH is necessary for estrogen production. Under the combined stimulus of FSH and LH, about 20-25 primordial follicles grow, become primary follicles, and turn into secondary follicles with a fluid-filled antrum cavity in their centers. Only one, however, is selected to become the mature preovulatory or Graafian follicle, destined to release its oocyte at ovulation. Not much is known about the mechanisms that determine which one is singled out or why all the others—perhaps 99.9 percent—undergo degeneration.

The increasing levels of estrogen produced by the developing follicles cause a decrease in pituitary FSH, the result of negative feedback. Whereas low levels of estrogen cause a decrease in LH levels as well, *high* levels of estrogen result in a positive stimulatory feedback effect, and cause an increase in LH production. Thus, as the levels of estrogen increase throughout the follicular phase, FSH decreases and LH increases. Just before ovulation, on about the twelfth day of the cycle, there is a peak surge of estrogen followed by a burst of LH, which causes ovulation. It is believed that the estrogen surge causes the LH surge by triggering an LH-RH surge from the hypothalamus.

Ovulation occurs within 16-24 hours after the LH peak. The granulosa cells from the ruptured follicle become tranformed into mature corpus luteum cells that function to produce progesterone, estrogen, and androgen. The progesterone continues the build-up of the endometrium of the uterus that had been started by estrogen. During this progestational phase, the uterine endometrium becomes thick, nutritive, and hospitable. The functional significance of the androgen produced by the corpus luteum is not known.

If fertilization does not occur, the corpus luteum regresses, and after approximately 14 days, its life is over. Just what causes the demise of the corpus luteum, or even what precisely sustains it during its life span is not understood, but there is some evidence that prostaglandin $F_{2\alpha}$ may be involved. With the decline of the corpus luteum, the levels of estrogen and progesterone rapidly decrease. The superficial layers of the endometrial tissue, no longer supported and stimulated by steroids from the ovary, begin to regress. As the top layers break down and disintegrate, blood from the endometrial arteries, tissue fragments, and glandular secretions slowly ooze into the uterine cavity. Over a period of four or five days, approximately 50 mL, or two and one-half tablespoons, flow from the uterus out the vagina and constitute the menstrual flow. The low circulating levels of estrogen and progesterone diminish their negative feedback effect on the hypothalamus and pituitary gland. Now LH-RH can again signal the release of FSH and LH to initiate a new menstrual cycle.

Correlates to the Menstrual Cycle

Many women have no premonition of impending menstruation, or if they are aware of any symptoms, pay little attention to them. Other women notice breast tenderness, water retention, headache, and perhaps an aggravation of acne. There are those who recognize that they are less tranquil and somewhat short-tempered before menstruation, and perhaps these psychological symptoms are related to the physical ones. These women are in no way incapacitated, however, and do not perceive such manifestations as significant. Other women do have a greater degree of physical and/or emotional distress, but it is also possible that what some people ignore, others consider very painful and stressful.

A number of studies have linked the time before and during menstruation with a myriad of symptoms collectively called the premenstrual syndrome. This clinical state is somewhat nebulous, and includes such physical and emotional manifestations as nervousness; inability to concentrate; paranoid attitudes; insomnia; fatigue; exhaustion (or alternatively, a burst of energy); heightened acuity in sight, smell, and hearing; increase in appetite or craving for sweets; weight gain; breast tenderness; water retention; nausea; diarrhea (or constipation); hand tremors—the list goes on and on. Various reports in the medical literature estimate that between 5 percent and 95 percent of all women suffer from these symptoms, with the age of occurrence being between 10 and 60.

It is possible that the retrospective questionnaires which are most often used to measure the physical and psychological correlates to the menstrual cycle may actually be measuring unwarranted assumptions and stereotyped beliefs about the menstrual cycle. The results of such studies should obviously be interpreted with caution.

In addition to the use of retrospective questionnaires, there have been other forms of investigations that try to relate phases of the cycle to statistical data of specific behavioral acts. Considerable evidence has been accumulated to indicate that women may suffer drastically negative behavioral changes before and during menstruation. Certainly the studies by Dalton and others that couple the premenstrual or menstrual period to auto accidents, attempted and successful suicides, crimes of violence, and psychiatric episodes appear to substantiate the assumption that women are more vulnerable to serious psychological problems, or at least that some underlying psychological disorder could be triggered at this time. [2,3,4,5,11]

But these studies, too, have been challenged by other investigators who question the methodology used and the interpretation of data. [6,7,8,9] Moreover, the fact that a greater percentage of men than women have auto accidents, attempt suicide, and commit crimes is rarely mentioned. Men, like women, are also subject to changes in gonadotropin and steroid levels, but no one has accused them of being at the mercy of "raging hormonal influences." Eventually, however, someone will no doubt attempt to correlate the incidence of emotional trauma in men with the menstrual cycles of their wives, mothers, sisters, or girlfriends!

All the emphasis on the negative physiological and psychological effects of women's reproductive cycles has almost obscured one obvious fact: The vast majority of women somehow manage to live through 40 years or so of monthly cycles without any extreme physical or emotional difficulties. Not only are they untroubled by cyclic manifestations during their reproductive lives, but they also discover, when those cycles cease, that much of what they have expected to dread about the menopause has also been highly overrated.

Dysmenorrhea

One widespread physical manifestation of the menstrual period is dysmenorrhea, or painful pelvic cramps that occur one day prior to or during menstruation. Statistical studies conducted among high school and college students, as well as among industrial workers have been wholly inconclusive—variously estimating the frequency of dysmenorrhea at 3 percent to 80 percent.

Dysmenorrhea has been attributed by some to a number of physical causes, including an obstruction of the cervical opening into the uterus or a "tipped" uterus, while others have called it psychosomatic in origin. Other theories that have been advanced are that too much estrogen, too little estrogen, imbalance in estrogen/progesterone ratio, too much progesterone, or even a food allergy could be the cause of discomfort. Recently menstrual pain has been associated with uterine contractions caused by chemicals called prostaglandins originating in the endometrium. Prostaglandins are a group of hormone-like, naturally occurring fatty-acid derivatives, widely distributed in the body and capable of stimulating smooth muscle contractions, among other properties. Potent prostaglandin inhibitors are now being used to block the enzyme systems involved in prostaglandin synthesis in the uterus at the time of menstruation. Since these inhibitors do not discriminate between blocking prostaglandins in the uterus and preventing prostaglandin synthesis throughout the body, the long-term effect of the drugs is still unevaluated. Plain aspirin, now known also to be a prostaglandin inhibitor, has a more proven safety record.

Menopause

Many women view the "change of life" with anxiety and fear because of the persistent belief that menopause is a physically and psychologically stressful and upsetting event. This perception may be perpetuated by doctors who, after all, see only those women with serious complaints.

Until the middle 1970s, millions of American women had been routinely encouraged to take estrogen replacement during menopause for emotional stability, sensuality, a youthful appearance, and feelings of well-being, despite the fact that there are only two uniquely characteristic manifestations of menopause that can be uniformly relieved by estrogen. These are vasomotor instability, or hot flashes, and a gradual atrophy of the genital organs, generally appearing 10-20 years after cessation of the monthly periods. Several studies have now established that duration of use and the dosage of estrogen-replacement therapy increases the risk of uterine and breast cancer. Women now must decide whether the benefit of what estrogen does for their symptoms outweighs what estrogen may do to their health, and it is advised that the drug be taken in the lowest possible dose for the shortest possible time.

Infertility

We could all agree that progress in methods of family planning has hardly been significant. We are at present still lacking and badly need safe, effective, reversible, and inexpensive means of contraception.

Much greater progress has been made in the diagnosis and treatment of infertility. In the past 15 years, the biggest breakthrough in infertility research has been the development of fertility drugs to induce ovulation. A woman becomes a good candidate for ovulation induction after it has been determined that her fallopian tubes are not obstructed, that she has ovaries capable of producing ova, and that she has a fertile partner. Drugs do not improve the chances for pregnancy in a woman who regularly ovulates.

The safest and least expensive method of inducing ovulation is by administration of clomiphene citrate (Clomid) in low doses. Clomiphene is believed to act as an anti-estrogen; it blocks the negative feedback effect of estrogen on the hypothalamus, probably by competing with estrogen for receptor sites in the brain. The hypothalamus, fooled into believing that the estrogen level is low, responds by an outpouring of LH-RH that causes pituitary production of FSH and LH to ensure follicle growth and ovulation.

Human menopausal gonadotropin (HMG), extracted from the urine of menopausal women, and human chorionic gonadotropin, obtained from human placenta, act directly on the ovaries to cause follicular maturation and ovum release. These are the most effective ovulation inducers available, but their high cost and high risk preclude their use except for women who do not respond to clomiphene citrate. The most recent addition to the "fertility drug" roster is bromoergocryptine, a medication that acts by blocking pituitary production of prolactin, the hormone that initiates and sustains milk production. Bromoergocryptine is most effective in women whose lack of ovulation is the result of increased plasma prolactin levels, but the drug has reportedly caused ovulation in women with normal prolactin levels as well.

The Future

Although there has been a virtual explosion of new information in some areas of reproductive neuroendocrinology, there is still more that is merely theorized or unknown than is known. The recent recognition of the adverse effects of estrogen administration, whether it be uterine cancer in the menopause; or cardiovascular disorders resulting from oral contraceptive usage during the reproductive years; or of the consequences of diethylstilbestrol (DES) exposure during pregnancy to mothers and offspring, illustrates the empirical nature of hormonal treatment. Hormones are often given therapeutically because of their presumptive effect, not because there is any clear understanding of how they actually work in the body.

To mention only a few of the areas needing further investigation, little is understood about the hormonal mechanisms underlying the onset of labor, the onset of puberty, or the physiology of menstruation. The way the follicle to be ovulated is selected is unknown, as is the mechanism of follicle rupture. Much, in addition, remains to be learned about the endocrinology of breast cancer and other tumors; the role of prostaglandins in reproduction and parturition; and about infertility and fertility control.

The highly sophisticated techniques of the 1970s have enabled identification and even synthesis of previously undetected hormones. We have more information about hormonal receptors, subcellular mechanisms, and metabolic pathways and conversions, and it is likely that enormous gains in our understanding and knowledge of female reproductive physiology will continue in the 1980s.

Scientific investigation, however, is still seriously hampered by preconceived notions, unwarranted assumptions, and stereotyped generalizations about the female mind and body. As educators, we must make it our business to "do battle" with these myths and fallacies. Only then can we help assure that future investigations of female reproductive anatomy and physiology are conducted in an atmosphere free of cultural bias, and that women will be allowed to exercise their fullest potential in society.

References

1. Belfer, M.L. *et al.* "Alcoholism in Women." *Archives of General Psychiatry* 25:540-544, December 1971.
2. Dalton, K. "The Curse of Eve." *Occupational Health* 28(3): 129-133, March 1976.
3. Dalton, M. "Children's Hospital Admission and Mother's Menstruation." *British Medical Journal* 2:27-28, 1970.
4. MacKinnon, I.L., P.C.B. MacKinnon, and A.P. Thomson. "Lethal Hazards of the Luteal Phase of the Menstrual Cycle." *British Medical Journal* 1: 1015, 1959.
5. Mandell, A. and M. Mandell. "Suicide and the Menstrual Cycle." *Journal of the American Medical Association* 200:792, 1967.
6. Parlee, M.B. "Stereotypic Beliefs about Menstruation: A Methodological Note on the Moos Menstrual Distress Questionnaire and Some New Data." *Psychosomatic Medicine* 36(3):229-240, 1974.
7. Ruble, D. "Premenstrual Symptoms: A Reinterpretation." *Science* 197: 291-292, 1977.
8. Sloane, Ethel. *Biology of Women*. New York: John Wiley & Sons, Inc., 1980.
9. Sommer, B. "Menstrual Cycle Changes and Intellectual Performance." *Psychosomatic Medicine* 34:263-269, 1972.
10. Speert, Harold. *A Pictorial History of Gynecology and Obstetrics*. Philadelphia: F.A. Davis Co., 1973.
11. Wetzl, R.D., J.N. McClure, and T. Reich. "Premenstrual Symptoms in Self-Referrals to a Suicide Prevention Service." *British Journal of Psychiatry* 119:525-526, 1971.

Dear Anita: Late Night Thoughts Of an Irish Catholic Homosexual

Brian McNaught

Reprinted with permission from
A DISTURBED PEACE: SELECTED WRITINGS
OF AN IRISH CATHOLIC HOMOSEXUAL
Washington, DC: Dignity, Inc., 1981.

Copyright by
Brian R. McNaught
1035 Beacon Street
Brookline, Massachusetts 02146

Dear Anita,

I am a 30-year-old Irish Catholic middle child of a family of seven. My father recently retired from the General Motors public relations staff. My mother now enjoys the peace of an empty house. My older brothers and sisters are married with children; my younger brothers and sisters are "searching for the meaning of life."

I had 16 years of parochial education. The nuns considered me a "prince of a boy." I was patrol boy of the year, played high school basketball, was Senior Class President and editor of the Marquette University yearbook. Recently I was named one of the "Outstanding Young Men in America" and was asked by a national magazine to share with others the development of what is considered an intense spirituality.

You and I share the same values, Anita. I too am afraid to walk the streets at night. I abhor pornography and drugs. I detest the rat race, the unemployment, the breakdown of the family, the incidence of illegitimate births and the inability of many school children to read and write. I too take the phone off the hook during the *Walton's*. I too miss *Star Trek*. I too cried during the final segment of *Mary Tyler Moore*. If you didn't know I was a homosexual, you would insist that I be at all your parties because Brian has a "great sense of humor." We would be praying together and playing together and you would pay extra to make sure it was me who babysat your children.

Let me assure you that I know you truly believe that your crusade is God's crusade. I also totally understand your fear, disgust or apprehension about homosexuality. Both of us have been raised since we were little to believe that: 1.) God condemns homosexuality; 2.) homosexuality is a psychiatric disorder; 3.) male homosexuals hate women and are sexually interested in children. We also learned that male homosexuals wish they were women and lesbians wish they were men.

If all that frightens you, think for a minute what it did to me as I grew up with the secret knowledge that for some unknown reason I was physically attracted to men.

I read the same Bible you read. I heard the same sick jokes you heard. For that reason, I never identified myself as homosexual. I couldn't be, I thought. I have shelves loaded with swimming trophies. I dated throughout high school and college and seriously considered getting married on three occasions. Homosexuals were supposed to be interested in children and I find the very thought abhorrent, and the closest thing to women's apparel I have ever worn was the outfit every Altar Boy wore.

Was I psychologically imbalanced? Well, for several years I thought about entering the seminary or monastery. Every time you apply to a Roman Catholic religious order they screen you by having you examined by a psychiatrist. With each interview I would reveal my homosexual feelings and without exception every psychiatrist told me it wasn't a problem. My only problem, they told me, was living in a hostile world.

Eventually I did enter the monastery but the scenario was similar to the one played out in "The Sound of Music" . . . you know, "always late for chapel but his penitence is real. Always late for everything except for every meal." After a while we concluded together that "Brian's not an asset to the Abbey."

Back at Marquette I was a daily Mass-goer. I read the lessons and led the congregation in song. I was labeled "dormitory Catholic" and "the saint." It didn't bother me. Faith is a way of life. Spirituality is an action verb.

Do you know that I didn't have any sexual encounters until I was 21? Most of the men in my class lost their virginity in high school, some earlier. But the "saint" didn't. It wasn't until he "experimented" with another lonely, frightened male student who was also a virgin that he knew what all the excitement was about. It was awkward and mechanical for both of us and ended with expressions of gratitude because it was so uncomfortable we both knew we couldn't possibly be *real* homosexuals.

Jim and I both, however, unbeknownst to each other, continued to have male-oriented fantasies. He asked if we might try it again and, being the rational creature that I am, I insisted that I had to have a heterosexual experience before I ever had another one which was homosexual so that I would know whether or not I had unknowingly closed myself off.

The following year, I did have my first heterosexual experience with a wonderfully patient and sensitive woman. Despite my earnest desire to enjoy it, thereby removing myself from a life of secrets, shadows and stereotypes, I could not experience physical pleasure.

Now doctors and the theologians of my Church say I am what is called a "constitutional homosexual" as distinguished from a "transitional homosexual." This means that my sexual orientation was set before I was old enough to know what was going on. They say age three to five. The only memory I have of being five is making beanbag puppets in Tot Lot and vague recollections of splashing around in Allen Goldstein's plastic swimming pool. But, they say, that's when it all occurred. They have conducted all sorts of surveys and tests to determine what causes a person's sexual orientation, not unlike the studies they used to make to figure out why some people are left-handed when the majority of the population is right-handed.

Do you know what they found, Anita? Nothing. Every study contradicted the other. All they know is that 10 percent of the population is exclusively or predominantly homosexual in orientation. That's 22 million Americans.

I mentioned "transitional homosexual." This term describes an individual who is basically heterosexual but who also engages in homosexual behavior when there are no persons of the opposite gender available, such as in prison or the Armed Forces. Once they are out of those circumstances, they revert back to heterosexual behavior.

Human sexuality, in my view, is a beautiful gift, which like all gifts can be and has been abused. It's like your gift of voice. You can use that gift to create beautiful, inspiring songs which uplift people's spirits or you can sing songs which upset people. You can sing upon request or you can force people to hear your singing when they don't feel up to it. You alone determine when and how you are going to use it.

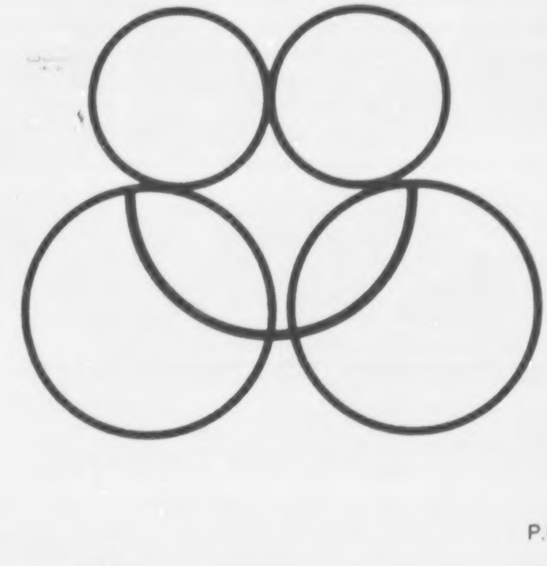
There was a time when it was taught that the sole purpose of human sexuality was procreation of the species. Women were instructed to lay perfectly still and even refrain from enjoying what was happening. The slightest enjoyment was considered sinful.

Today, we say that human sexuality can be procreative but that it doesn't have to be. We rejoice at the wedding of a young or elderly couple who for one reason or another are incapable of having children. We wouldn't think of asking them to refrain from expressing their love to each other without the gift of sexuality. We know by our studies of infants that every human person needs to be held and stroked. We know that without human warmth, an infant can die or become seriously maladjusted.

We also know that sexual expression is a language. It can mean a variety of things, from "I love you," "I need you," "I'm lonely," "I'm hurt," to "I hate you." The most beautiful expression of human sexuality is when it communicates selfless love. The most abhorrent is rape. Between the two there is a whole spectrum of meanings and values.

Secondly, I would dare to say that I have studied and prayed through Scripture with the same excitement and interest as you have. Your God is my God. Your spiritual goal is my spiritual goal. Your hope is my hope. But we both know how easy it is to abuse Scripture. Slave owners used it to justify slavery. Catholics used it to torture and kill Protestants. Christians continue to use it to condemn Jews. We are weak human beings who frequently look to the Bible for justification of our position, our fears and even our hatred.

Who today pays any attention to Leviticus:11 when they sit down to a lobster dinner or New England Clam Chowder? Who stones the woman caught in adultery as the Bible insists? Who believes that people get married because they can't control their lust? What priest or minister has ever been denied ordination because he or she had a hernia operation, a crooked nose or humped back? Do we burn red dresses? Do we hang St. Paul's hair-cutting specifications in our barber shops and beauty salons? Rather, don't we explain that much of the Bible has to be understood in a cultural context? Anita, you know that the Old Testament Jews prepared their meals the day before the Sabbath because work was absolutely forbidden on the Sabbath. When was the last time any of us fried eggs and bacon on a Saturday night for Sunday brunch?



P.E.

P.E.

Why then do we quote Genesis, Leviticus and St. Paul's letters to Romans, Corinthians and Timothy as justification of our belief that God abhors homosexuality? Scripture scholars insist that every one of those passages has been taken out of context. No one understood the concept of "constitutional homosexuality" until 60 years ago. The Jewish writers of the Old Testament and St. Paul in the New had no idea that anyone was homosexual in orientation by nature. They presumed that everyone was heterosexual and that those engaging in homosexual behavior were heterosexuals mimicking pagan rites, which was tantamount to idolatry. These findings are not by closeted homosexuals who seek justification of their lifestyle. The scholars in question have pursued the accurate interpretation in every area of Scripture. What good is the message of God if it is misunderstood?

In your book and in your national campaign you state your opposition to homosexuals teaching in schools. You and I both know that homosexuals have been teaching in classrooms for centuries. You have told the American people that homosexuals want to wear dresses to school. Wearing the clothing of the opposite gender is called transvestism, and while there are some gay men who have and do on occasion wear women's attire, the majority of transvestites are heterosexual males. And yet, given these statistics, no one is suggesting that heterosexual male teachers wish to wear their wives' clothing to math class.

Likewise with your comments about child-molestation. Persons who are sexually interested in children are called pederasts and I am sure you have heard of the studies which show that the overwhelming majority of pederasts are heterosexuals. Usually the case involves a father with his young daughter. Do we take this information from police blotters and then suggest that all heterosexuals are child-molesters? No. That would be absurd. But that's what you are telling the country about homosexuals and many people seem to believe you.

When you say, Anita, that gay civil rights will prompt homosexuals to flaunt their lifestyles, what do you mean? Do you mean that a homosexual teacher, assigned to teach history, will spend class time describing his or her relationship at home? If that is what you are opposed to, I join you in your crusade. A teacher is hired to instruct students in a specific area of learning. But is that what you mean by "flaunting"?

Isn't the whole battle really centered upon your opposition to the gay man or woman affirming himself or herself as being a happy, healthy, normal, country-loving, God-fearing human sexual being? This is what gay people are saying the whole battle is for them. We are simply saying that we are unable to live healthy, productive lives in a society which insists we are sick and sinful people.

Let me make the case more understandable by bringing it closer to home. Let's for the sake of argument say that your 13-year-old son Bob, Jr., has strong homosexual feelings. What does it mean? It means that even if you asked him about it he couldn't or wouldn't talk with you. This would probably upset you, especially if you knew there was something troubling him that he didn't feel secure enough to share with his mother. I have watched you closely, Anita, given all the press coverage, and am impressed with your devotion to your family. Playing and praying together are essential ingredients in creating a family unit which will be something a child can look to for support throughout his or her life. My folks did the same and have reaped a family strength which is the envy of many of their friends.

But even given that security, Bob, Jr., couldn't and wouldn't talk with you about his homosexual feelings. He couldn't because he wouldn't understand them himself. He would be aware of the fact that while watching television or looking through books or swimming at the country club he was inexplicably excited by the sight of a handsome man but he couldn't put a label on it. Even if he could, he wouldn't talk with you about it because your love and Bob's love mean everything in the world to him and he would never say anything which might threaten that.

Therein lies the tragedy of being a homosexual in today's society. What makes it even worse, is that despite his homosexual feelings, chances are that Bob, Jr., really isn't a "constitutional" homosexual. Kinsey revealed in his studies that while close to 10 percent of the total population is predominantly or exclusively homosexual, 37 percent of the American male population have homosexual experiences and 50 percent homosexual fantasies. This means that well over 20 percent of those having homosexual experiences are not actually homosexual by nature. But because we don't talk about it, because the subject is taboo, they don't know that.

Getting back to Bob, Jr., though, let's presume that he is homosexual. (You may say this is an absurd argument because you are sure he isn't. My parents would have said the same thing because I defied every stereotype.) Who is your son supposed to talk to? He doesn't understand what's happening to him. At that age, he would probably change if he could, but he can't. Does he approach your minister? We know what kind of reception he would get and so does he. Is there a gay teacher at school whom he respects? Probably not. There are undoubtedly gay teachers at his school but they won't admit it for fear of being fired.

Bob, Jr., is alone in the world. For year after year he carries this heavy psychological burden. He likes himself and hates himself. He decides to date and probably really enjoys the company of his girl friends, but he just isn't interested in heavy kissing and is incredibly uncomfortable in any situation where that is expected of him. He jokes in the locker room and laughs with his friends about his Mother's comments on "Adam and Bruce" in the Garden of Eden. He calls his classmates who are weak and effeminate "queer." He even roughs one up to prove his masculinity.

Family and friends praise him for his looks and kid him about him being a real "lady-killer." He watches the smiles of pride that you and Bob have on your faces. What a fine man Bob, Jr., is turning out to be. Inside, he is tearing his guts to shreds. "If they only knew. If they only knew."

The scenario is similar in college. His moodiness bothers you a bit at times but you presume that it is the pressures of school and career choices. What actually bothers him is the pedestal he's been put on and the expectation that everyone has of him to eventually settle down with the Breck girl and produce 2.75 healthy children.

If he makes it this far, then he has some major decisions to come to grips with. I say "if" he makes it this far because the chances are good that he will kill himself before he has to choose to hurt you. Suicide is the number one cause of death of young gay people. A bullet to the head ("he was cleaning his gun"); crashing the car into a concrete overpass ("He must have lost control"); an overdose of drugs ("He wasn't that kind of boy. Someone must have forced him"); or he can die emotionally by abandoning his dreams and accepting the sick and sinful label as a lifelong curse.

I was lucky, Anita. After I drank the bottle of paint thinner and consumed the bottle of pills, I changed my mind. I drove to the hospital and had my stomach pumped. As the tears rolled down the cheeks of "The Saint," I vowed never again to live my life based upon the expectations of others. Given a choice, I felt they would prefer me to be a living homosexual than a dead question mark. Some people in this country, as we both know, would prefer I hadn't changed my mind.

But not you, Anita. Beneath all of that rhetoric is a basic belief in God. It was our God that I wanted to go home to when I drank the paint thinner. I felt like a kid at camp who couldn't cope with the hostility of the counselors and the other campers. Every day was a nightmare. If God wasn't going to come to camp and pick me up, I was going to run away and explain it all later. I changed my mind when I decided that I had paid the same price to attend camp as every other kid and that camp rules prohibited the counselors from acting like God.

If the Bob, Jr., of our story never chose to commit suicide, he would have to choose whether or not to marry. If he marries, he will fantasize about men while having sex with his wife. (Many of the people I counsel are married men with several children. They have been able to perform sexually by pretending that it was another man they were relating to.) If he chooses not to marry a woman, then he can attempt to be celibate (a goal which has met with little success) or he can seek out a companion with whom he wishes to share his life.

Anita, let's say that Bob, Jr., comes home and finally and tearfully tells you that he is a homosexual. I heard you say on CBS's "Who's Who" that if that happened you would tell your son that you love him. I know that you would. You would tell him that you love him as much now as you did before. He continues to cry and tells you and Bob how hard it has been for him and how he didn't want to hurt you and how he feels so relieved that you both now know. He has missed being part of the family and asks if it is OK to tell the other three children.

Into the house walks a family friend, who, in the midst of a conversation begins talking about "queers" making gains in New York City. Bob, Jr., is sitting quietly with you, attempting to refrain from showing any reaction. The conversation continues. "Those faggots want to dress in women's clothing, molest our children, flaunt their homosexuality, etc., etc., etc."

Do you sit and listen quietly? Do you interrupt and change the subject? What is your husband's reaction? When you have your answer, Anita, you will know exactly how my parents and 44 million other parents in this country react when they hear you on television or read your comments about their children in the newspaper.

What is Bob, Jr.'s reaction? Does he begin to water at the eyes? Does he storm out of the house with thoughts of suicide, revenge, hate, disappointment with you, or pride? You know your son. What is his reaction? When you have that answer, Anita, you will know how I felt inside and how 22 million other Americans felt when they watched the results of Dade County, St. Paul, Wichita and Eugene and when they listen to you speak.

I knew that we were going to lose in Dade County *et al.*, because people don't understand what "gay pride" is all about. They mistakenly see it as one more threat to stable American life. But if you and your family experienced the real psychological terror that Bob, Jr., would go through as a homosexual, you would understand what this "gay civil rights movement" is all about.

It is a primal scream, Anita, by millions of people who want to live. It is an angry denunciation of all of the lies which have been heaped upon us for as long as we can remember. It is a pleading to straight society to refrain from forcing us to live in shadows of self-hate. What could be more inhumane?

Gay civil rights are human civil rights. Competent people should not be denied jobs because of what they do as consenting adults in the privacy of their homes. People should not be denied shelter because of inherent feelings they have had since they were children.

If you want to go on a national campaign against any person who molests children; against any person who recruits children; against any person who sexually forces himself or herself upon another; against any person who is not doing what he or she was hired to do, you will have my talents, energy and money behind you. Homosexuals, however, have nothing to fear from such a crusade.

What homosexuals and every other person under the sun fear is being stereotyped. One band instructor who sodomizes boys is no more an indictment of homosexuality than Hitler's hate for the Jews is for all of Germany; the Ku Klux Klan's hatred of blacks is for all Southerners; the Boston Strangler is for all heterosexuals; Sirhan Sirhan is for all Arabs or Joseph McCarthy is for all Catholics. Nor should a gay person affirming himself or herself be construed as "flaunting" any more than black persons affirming their blackness; Christians affirming their faith, or a woman affirming her uniqueness as a woman.

We are all unique, Anita. Each of us is called to develop our unique talents, totally reflecting the wholeness of our being. No one has the right to deny that process unless it truly interferes with the rights of others.

You state that gay civil rights infringes upon your right as a mother to raise your child in a healthy society. But the healthiest society is that which protects people from blind fear of others and guarantees them the right to life, liberty and the pursuit of happiness. To challenge that is to challenge not only the cornerstone of this country which we both claim to love but also the very fiber of our faith which we both claim to follow.

I will join you in prayer tonight, Anita, requesting that those who suffer might be comforted and that those who are comfortable might be disturbed by the suffering of others.

Genetic Screening: Potential

Barton Childs

Reprinted with permission from
THE SCIENCE TEACHER,
Volume 43, Number 5, May 1976.
Copyright by the
National Science Teachers Association
1742 Connecticut Avenue, NW
Washington, DC 20009

When people think of medicine they commonly consider only two of its three traditional missions: *diagnosis*, which consists of defining disease, preferably in terms of cause, and *management*, which includes specific and supportive treatment, prognosis, and counseling. This concept of medicine is encouraged by the media, which give special attention to dramatic life-saving techniques and to the application of the triumphs of laboratory science to human illness. But many people are alive today not because of intervention after the onset of sickness, but because of *preventive medicine*—that is, public health measures designed to prevent disease. Such measures range from immunizations and mosquito control to social action to improve housing and nutrition. Preventive medicine is the third mission of medicine.

Today financial constraints cause us to seek to avoid expensive medical therapies by a new emphasis on preventive medicine; the most economical way of doing this is to give special attention to salient medical problems and to "high-risk" groups. Examples of such medical problems are infant mortality, alcoholism, accidents, environmental risks, and the health problems of the poor and aged.

One high-risk group consists of persons whose genetic endowment puts them or their offspring at a disadvantage. If it were possible to treat these people before the onset of illness or advise them when reproduction is contemplated, disaster might be averted. One way to do this is by genetic screening, a method which differs from ordinary public health measures (which are directed to the whole public) by specifically applying the preventive technique where it will do the most good. Thus, genetic screening complements other public measures employed to prevent disease and maintain health. The National Research Council recently published a review of genetic screening, a source which this paper draws upon heavily. [1]

Genetic Disease—How Widespread?

It is difficult to discuss the extent of genetic disease since they become manifest only in particular environments; but there are now listed over 2,000 genes which cause disease in most usual environments. [2] It is estimated that about 5-9 percent of all persons will in the course of a lifetime develop some serious genetic problem, as now defined. [3, 4] In addition, 20-25 percent of the beds in university hospital pediatric wards are occupied by children whose diseases are strongly influenced by their genes. Each of these diseases in the list of 2,000 is rare, or at least uncommon. But because they are chronic and often require long-term support and care, they lay an immense physical, emotional, and financial burden on victims and their families, as well as on society.

Of perhaps greater numerical importance is the genetic contribution to some of the major chronic diseases of middle life. For example, we have learned recently of the contribution of a few specific genes to the origin of arteriosclerosis and emphysema, conditions of wide general prevalence which take a heavy toll. There is also a genetic contribution to diabetes, hypertension, and to some kinds of cancer; and here, too, there are some forms which are known to be associated with specific genes. Unfortunately we do not yet know the nature or number of the genes which make most of the people affected by these disorders susceptible to the adverse effects of particular environments. The discovery and study of the existence of these genes will call attention to the environmental causes of the disorders while alerting susceptible persons to their dangers.

Genetic Screening

Genetic screening may be defined as a search for persons with genetic characteristics likely to be harmful to themselves or their descendants. Its aims are threefold: to discover persons with early or incipient disease, with an eye to early treatment; to discover persons to whom reproductive information would be useful; and to carry out epidemiologic and other research studies.

For management. Nearly all state health departments provide facilities for testing for phenylketonuria (PKU), a recessive disorder readily treated by a diet low in the amino acid phenylalanine. Failure to treat an affected individual results in mental retardation, and the earlier the treatment, the more likely is normal development. Forty-three of the fifty states have or had laws requiring this service. Studies attest to the economic advantages of PKU screening, and since this service has been offered, the number of patients admitted to institutions for the mentally retarded has declined. [5, 6]

Some states provide screening for other diseases of the newborn infant—usually rare but life-threatening maladies for which there is some treatment. This is economically feasible because all of the tests can be done on the same sample as that collected for PKU testing.

The essential characteristic of this kind of screening is that the condition be an unequivocal disease and that the treatment be effective and harmless. Some state health departments screen for conditions such as histidinemia, which is not well established as a disease and for which treatment would be of marginal value. Such screening, if carried out at all, should be considered research aimed at discovering the natural history of the condition.

It is also inappropriate to screen for conditions with delayed onset and for which there is no treatment. For example, one would not test for Huntington chorea, whose manifestations do not appear until the fourth decade, or even for muscular dystrophy, which has its onset in the early years of life, because in neither instance can one interfere with the remorseless march of events.

For reproductive options. No strong case can be built for screening populations for carriers of genes which produce disease in the homozygous state unless abortion is an option. Otherwise, carriers have only two possible choices: not to have children at all or to endure nine months of uncertainty, with such probabilities for afflicted children as 1:2 or 1:4. But when antenatal diagnosis is coupled with the option of abortion, screening becomes more acceptable. For example, Tay-Sachs disease is a lethal disorder occurring with an incidence of 1 in 3,600 Ashkenazi Jews. This means that 1 in 900 couples have a 1:4 chance of having an affected child. But antenatal diagnosis followed by abortion has succeeded in providing susceptible couples with families free of the disease.

An antenatal chromosome analysis can diagnose Down's syndrome, or mongolism, a disorder accompanied by severe mental retardation, although it is not usually lethal. Here the high-risk group consists of women of 35 years or older, in whom the probability of such an affected fetus is of the order of 1 percent or more.

For enumeration, surveillance, and research. Simple physical examinations can be carried out in nurseries of newborns to detect children with malformations and developmental disabilities. This screening has a double purpose: to ensure that available community services are brought to the attention of the parents of such infants, and, if the monitoring is widespread, to signal local increases in the incidence of such malformations, which may indicate the prevalence of some new cause. For example, had there been widespread monitoring at the time of the thalidomide disaster, the origin of those malformations might have been discovered sooner.

Most screening today is carried out as research into the feasibility and organization of genetic screening. Some testing is done just to determine the incidence and distribution of genetically determined variations which have nothing to do with disease but which are of importance in the study of population genetics. Some testing analyzes the natural history of variations only sometimes associated with abnormality—for example, the XYY karyotype. [7] Because male individuals with one extra Y chromosome are overrepresented in prisons for disturbed people, it was erroneously thought that all individuals with this karyotype must eventually have trouble with the law. As a result of screening, we now know that this is not so; but we still need to understand the relationship between the possession of a supernumerary Y chromosome and behavioral aberration. [8, 9] We do not really know what proportion of all such persons can be considered abnormal in any way, or which person is at risk. Perhaps in the end it will turn out that the extra Y chromosome only leads to abnormal behavior under unfavorable conditions. But without investigative surveys, we shall never know the answers to any of these questions

Investigative screening for persons with genetic predispositions to premature heart attacks and emphysema is now being conducted. In contrast to the rarely occurring conditions for which most screening is carried out, these diseases are frequent, and constitute debilitating and life-threatening disorders of middle life. Should tests be discovered which are feasible and economical, the information may prove worthwhile for many persons. The discovery of a genetically-determined propensity to disease might lead susceptible persons to modify their health behavior. Perhaps people who know their *individual* susceptibility to disease will be more likely to heed warnings related to drinking, smoking, and diet.

P.E.

P.E.

Organization of Genetic Screening

The National Research Council (NRC) committee recommended that genetic screening be offered as a medical service *only* if the following conditions can be fulfilled:

1. There is evidence that it is beneficial to and generally accepted by the public, including medical practitioners.

2. Its feasibility has been thoroughly investigated and a field test of the program has shown that benefits outweigh costs; public education has been effective; informed consent is feasible; the size of the sample to be screened, the age of the subjects, and the setting in which testing is to be done have all been defined; laboratory facilities are adequate and subject to rigorous quality control; techniques for communicating the results of tests are workable; qualified and effective counselors are available in sufficient numbers; and provision for follow-up and treatment has been made.

3. There is a mechanism to evaluate the effectiveness of each step in the process.

Since these conditions are not now generally met, the Committee recommended screening as a public service only for phenylketonuria, which is already a well-established procedure of recognized public benefit. This means that the rest of genetic screening should be regarded, for the time being, as experimental and that its evaluation will provide the directions it should take. It is impossible without such experiments, however, to know how beneficial genetic screening will prove to be.

Because it is difficult to achieve high standards if screening programs are initiated by individuals of variable competence and with a variety of aims, the National Research Council Committee recommended the creation of screening authorities based on states or regions to carry out requisite studies to coordinate testing, treatment, and evaluation. An example of such an authority is found in Maryland. This commission was created by the state legislature, which repealed laws requiring screening for sickle cell disease and phenylketonuria and empowered the commission to recommend to the State Health Department what testing should be done. Screening for PKU has continued, but the commission is expected to involve the public and the medical profession in decisions about testing for other conditions and to oversee the involvement of state health facilities.

Obviously, the mere appointment of such a body does not guarantee success, but it does recognize that these procedures involve a large proportion of the public and that they should not be left entirely to an unregulated medical or health profession. Such a commission is also a visible and ready source of information for the general public or medical profession. Above all, the commission's guidance should reduce to a minimum the hazards of genetic screening.

Where should testing be done? Testing has been done in hospitals, clinics, schools, churches, and factories—but seldom in physicians' offices. This is mainly because screening has not been seen for what it really is: just one more form of "health maintenance," best accomplished in the clinic or doctor's office under the same conditions as immunizations for whooping cough or measles. No doubt some tests are best accomplished elsewhere, but the doctor's office may do more to prevent patient misunderstandings and confusion.

Hazards

Where transgressions of human rights occur in genetic screening programs, they are generally the unwitting result of the narrow views of investigators and ardent program initiators. Consent may not be obtained, or if it is, may not be informed; confidentiality may be breached; or persons discovered to be the carriers of a gene which is in fact completely harmless may be labeled or stigmatized. These hazards are not fanciful. All have occurred in various forms and degrees in actual screening programs. Such transgressions are usually the product of defects in the organization of the screening program, a lack of counseling, or an inadequate pre-screening educational program.

There are other hazards, for example that the public will see genetic screening as producing eventually a "normal" baby from every pregnancy—a promise which is neither implicit in the method nor possible. Misunderstanding could also lead to a construction in the conception of what is "normal," to a diminution in self-image and in the value of individual human variation. None of these is intended: the aim of genetic screening is to broaden not narrow options.

Finally, genetic screening might be perverted to eugenic purposes intended to benefit society at the expense of individuals. This is not the intent of laws which have passed requiring genetic screening. PKU legislation, for example, was pushed through by members of the National Association for Retarded Children, who were indifferent to its genetic aspects but were concerned with preventing one form of mental retardation. But it might be argued that such laws should be passed, in an erroneous analogy to the laws relating to infectious diseases. Perhaps the best safeguard against the use of genetic screening for such purposes is an informed and watchful society.

The Future of Genetic Screening

It is probable that genetic screening will take its place as one among other forms of preventive medicine. It will not preclude other preventive measures, nor necessarily have top priority, certainly not while it is still in an experimental stage. But the idea of discovering people before disease has had a chance to destroy their lives or to distort development, of detecting special susceptibilities in particular persons so as to allow them to make constructive adjustments in their lives, or of discovering persons possessing genes which can damage or destroy their offspring so as to provide them with reproductive options—all seem useful concepts which should be employed whenever the benefits outweigh the costs.

In order to achieve this, however, there is a formidable problem of public and professional education. There is evidence that the medical profession is itself unready for widespread genetic screening—or indeed for the application of genetic knowledge in other ways. This suggests the need for revising medical school curricula, as well as emphasizing genetics in continuing education. [10]

As for the public, it has been demonstrated repeatedly how difficult it is to inform adults about preventive health care. Before they will take action, people must perceive their own susceptibility, the seriousness of the condition to be prevented, and the benefits to be had. [11] There are many barriers to these perceptions, among which is a lack of understanding of the nature and operation of the human body. Something can be done about this in primary and secondary schools, if human biology is taught in such a way that children see the relation of the knowledge to their own lives. [12] The necessity for education on both sides must be emphasized, because if primary medical care and the maintenance of health are to be successful, it can only be as the result of informed discussion between the health professional and the patient—especially urgent these days when most people see good health as belonging to all by right.

There is another reason for promoting widespread public understanding of human biology and genetics. Discussion of the uses and value of genetic screening is only part of a wide-ranging debate on the issues of genetic knowledge in human affairs. Some people fear that genetics will be misused in eugenic programs; others worry about ill-considered efforts to change genetic material or to cultivate clones of human beings. These latter fears will prove baseless: these manipulations are now impossible and will remain so for the foreseeable future. Genetic screening, antenatal diagnosis, and genetic counseling will remain more likely subjects for debate. If these subjects are approached in a mood of skepticism, and if ongoing programs are subjected to continual evaluation, it is likely that moral and ethical questions will be settled to the general satisfaction, without sacrificing procedures which are clearly for the public good.

References

1. *Genetic Screening; Programs, Principles and Research*. National Academy of Sciences, Washington, D.C. 1974.
2. McKusick, V.A. *Mendelian Inheritance in Man*. Johns Hopkins Press, Baltimore, Md. 1974. Fourth edition.
3. Scriver, C.R. *et al.* "The Frequency of Genetic Disease and Congenital Malformation Among Patients in a Paediatric Hospital." *Canadian Medical Association Journal* 108:1111-1115; 1973.
4. Trimble, B.K. and J.H. Doughty. "The Amount of Hereditary Disease in Human Populations." *Annals of Human Genetics* 38:199-223; 1974.
5. Bush, J.W., M.M. Chen, and D.L. Patrick. In *Health Status Indexes*, R.L. Berg, Editor. Hospital Research and Educational Trust, Chicago, Ill. 1973. Pp. 172-194.
6. MacCready, R.A. "Admissions of Phenylketonuric Patients to Residential Institutions Before and After Screening Programs." *Journal of Pediatrics* 85:383-385; 1974.
7. Hook, E.B. "Behavioral Implications of the Human XYY Genotype." *Science* 179:139-150; 1973.
8. Hook, E.B. "Geneticophobia and the Implications of Screening for the XYY Genotype in Newborn Infants—A Discussion of the Boston Controversy." In *Genetics and the Law*, A. Milunsky *et al.*, editors. Plenum Press, New York, N.Y. 1976.
9. Hamerton, J.L. "Human Population Cytogenetics: Dilemmas and Problems." *American Journal of Human Genetics*. 1976. (In press.)
10. Rosenstock, I.M., B. Childs, and A.P. Simopoulos. *Genetic Screening. A Study of the Knowledge and Attitudes of Physicians*. National Academy of Sciences, Washington, D.C. 1975.
11. Rosenstock, I.M. "Why People Use Health Services." *Millbank Memorial Fund Quarterly* 44:94-127; 1966.
12. Childs, B. "A Place for Genetics in Health Education and Vice Versa." *American Journal of Human Genetics* 26:120-135;1974.

Genetic Screening: Pitfalls

Jonathan King
Jon Beckwith
Larry Miller

Reprinted with permission from
THE SCIENCE TEACHER,
Volume 43, Number 5, May 1976.
Copyright by the
National Science Teachers Association
1742 Connecticut Avenue, NW
Washington, DC 20009

Potential benefits of genetic screening, as described in the accompanying article by Dr. Childs, derive largely from a choice given to a small number of parents as to whether or not they wish to bear a child who may not be fully healthy, and from the ability to detect and treat successfully those few infants with debilitating metabolic deficiencies.

Genetic screening programs are a mushrooming area of medical practice and biomedical research. The upsurge in these programs, however, as well as legislation making screening programs mandatory, are resulting in immediate and long-term medical and social problems. [1] These include: possible stigmatization or labeling of individuals screened, classification of normal human variations as "genetic diseases," use of genetic explanations for ill health to distract attention from social and environmental factors, and attributing human and social problems to the expression of "abnormal" genes.

It is also instructive, and revealing, to look at genetic diseases from the perspective of overall health problems. (In general, the health needs of this country have rarely been matched by medical practice.) Major health problems can arise from five broad areas: occupation or environment, infection, old age, poor nutrition, and genes. Whether measured in terms of death rate or loss of working life (which puts more emphasis on deaths of younger people), genetic components of illness still rank far below the others. [2]

Yet genetic conditions are described as the "most ubiquitous of all human maladies." [3] In the sense that all the ills humans are subject to are due to our being humans and not rats, this claim is true. For example, human embryos are severely damaged by exposure to thalidomide; rat and guinea pig embryos are not. According to the genetic model, this could be seen as due to our genetic susceptibility to thalidomide, rather than to unnecessary and dangerous exposure to the drug.[1] The overall effect of the genetic approach is to shift responsibility for our health away from society—which controls the quality of the environment—onto the individual, who is the product and victim of his or her genes. As we will see, this happens not only in the area of health, but also in the broader arena of social behavior.

The new emphasis on genetic medicine may be traced to the extraordinary advances in biochemical and genetic knowledge since World War II. New technologies permitting detection of very small biochemical and chromosomal differences between individuals have developed. Although some of these have turned out to be medically useful, biological technologies have also been generated which are in search of some possible medical use. In a sense, the basic biological research program of the National Institutes of Health, Bethesda, Maryland, has spawned technologies in need of socially useful applications in the same way that the space program has generated specialized engineering technologies now searching for some social use.

Classes of Programs

Genetic variations between people can be detected by examining cells or urine. Using cultures of human cells, it is possible to examine the number and structure of chromosomes. In this way, variations such as extra chromosomes or chromosome rearrangements can be observed. By studying the enzyme make-up of cell cultures, or by looking at biochemical compounds in urine samples, it is also often possible to detect genetically-caused variations. It is important to bear in mind that most differences have no effect on health whatsoever. Like hair color or fingerprints, they may be part of the natural range of human variations.

---

[1] A logical extension of this reasoning, therapy in which we modify our genes or substitute rat genes is not that far-fetched; it underlies some of the push toward genetic engineering research.

The application of such screening techniques fall into three classes. [4]

1. Adults, married or unmarried, can be screened to see if they carry either a chromosomal or biochemical variation. In some cases, prospective parents can thus learn if there are any chances for their bearing a child with a genetic variation.

2. Amniocentesis, a technique for examining fetal cells, allows identification of embryos who can be predicted to have serious disease. Parents can then decide whether they wish to abort the fetus.

3. Postnatal screening of newborn infants can allow detection of certain conditions which can be successfully treated.

Four Case Studies

As was mentioned earlier, those genetic variations which have been targeted by screening programs tend to be rare in the population, particularly compared with other causes of ill health. For example phenylketonuria (PKU) affects 1 individual in 14,000, histidinemia, 1 in 21,000 individuals, Tay-Sachs disease, 1 in 3600 people of Ashkenazic Jewish extraction (and about 10 times fewer in the general population). Males with an extra Y chromosome occur among 1 in 1,000 newborn males. In the case of the first three inherited metabolic variations, heterozygotes (carrier individuals having the genetic variant on only one chromosome of a pair) are much more common than homozygotes, who carry the defect in both chromosomes. In general, carrier individuals are perfectly healthy.

It is instructive to examine the history of the screening programs for these four cases. *Phenylketonuria* (PKU) [5] is probably the best known and studied. Because affected individuals lack a particular enzyme, they are unable to convert the amino acid phenylalanine to the related amino acid tyrosine. Therefore, they accumulate phenylalanine and are deficient in tyrosine. In a large percentage of cases, mental retardation is associated with the condition. It is generally believed though that putting the newborn PKU infant on a low phenylalanine, high tyrosine diet will partially alleviate the developmental effects on mental function. Laws have been passed in nearly every state requiring screening of newborns for PKU.

Since there appears to be a therapy, PKU screening clearly holds benefits: Given treatment, the affected individual and his or her parents will have fewer constraints in their lives and greater possibility for fulfillment. Luckily, the dietary treatment is discontinued before the child is far advanced in school, when continuance of the diet would seem strange to the child's peers.

Histidinemia [5] is a case of a normal human variation being classified as "genetic disease." Histidinemia (high levels of histidine in the blood) is thought to be due to the absence of the enzyme histidase—as a result of mutation. One state mandates screening for the condition, even though continued research has failed to disclose anything wrong with individuals with histidinemia. High levels of histidine in the blood are perfectly tolerable for humans. Here, *variation* has been equated with *abnormality* and therefore with *disease*, a confusion that appears again and again in discussions of genetic disease.

None of us would call blue eyes a genetic disease, although blue-eyed individuals differ genetically from brown-eyed ones. This is simply a case of genetic polymorphism—different versions (alleles) of the gene that specifies the pigment-forming enzyme co-exist in the population. In some polymorphisms, one allele may be much more rare than the other. Should we then call the variant an abnormality, a disease? Clearly not. Yet many genetic screening programs are based on just this idea, reinforcing the myth that genetic variation is equivalent to genetic abnormality.

A major genetic screening effort for *Tay-Sachs* disease has been going on in Maryland for many years. This disease is due to a homozygous gene which controls an enzyme necessary to fat degradation. The disease has tragic effects and results in death due to degeneration of the nervous system, usually before age five. Heterozygous carriers of the Tay-Sachs gene can be detected by assaying body tissue for the enzyme hexoseaminidase. In the Ashkenazic Jewish population, the Tay-Sachs gene occurs at high frequency, approximately 1 in 30 adults screened. The screening program involved an extensive community education program—partially to counter the ideas that carriers were somehow stigmatized or that the program had inherently racist tendencies. The Tay-Sachs condition can also be detected in fetal tissue. Thus couples, in which both members were carriers, could elect amniocentesis. If the child was a homozygote, the couple could elect abortion.

After screeening 10,000 individuals in the Maryland program, 11 couples were identified in which both members were carriers. Four of these already had children, all of whom were normal. Five pregnancies occurred after initiation of the screening program, each of which was monitored by amniocentesis. One of the tested fetuses appeared to be homozygous for the gene, and the couple elected abortion. Thus the entire program, at time of last review (1974), resulted in the identification and abortion of one fetus with Tay-Sachs disease. [6]

Preventing the pain and suffering of one Tay-Sachs child and his or her family can certainly be considered justification for the screening, but certain aspects of the program raise serious questions. First, such a program reflects a disturbing distortion of priorities. The population tested, like any other, was subject to many assaults on its health—environmental carcinogens, smoking, lead poisoning, heart disease. Yet, the one health program that tried to contact everyone in the community through extensive outreach and publicity was a genetic one—and it had as its result the aborting of one individual.

Second, despite attempts to educate the target population to the fact that the carrier state is harmless, a number of individuals considered it quite serious when told they were Tay-Sachs carriers. [7] As a result, at least some Tay-Sachs screening programs have not been pursued. For instance, in Dayton, Ohio, "The local advisory committee decided that the psychic burden on those 72 heterozygotes was too high a price to pay for the prevention of a single case." [8] This unhappy consequence of screening programs results from a public misconception reinforced by the medical community—namely, that there is something wrong with you if one of your genes is different.

The outcome of these unhappy experiences is that many people are questioning the risks stemming from personal disruptions vs. benefits from programs such as Tay-Sachs screening. [9]

A program which developed similar but more exaggerated problems is the screening of blacks for the *sickle cell* trait. [10, 11]

Though sickle cell anemia was one of the first human diseases to be understood at the molecular level, organized medicine paid little attention to it until increasing political pressure from the black community in the 1960s forced Congress to provide more funding. After this period, 13 states passed laws mandating screening for sickle-cell trait among black adults or black school children. Carriers of the sickle-cell trait are found in about seven percent of the black population. No disease or health problems are known to be associated with the carrier state. However, identification of carriers has often caused psychological and social problems for those individuals, who may feel diseased and develop anxieties about their health. In some areas, individuals identified as sickle-cell carriers lost their jobs or were issued higher life insurance premiums. The one possible advantage, that carriers might not marry other carriers, (or might decide not to have children) never materialized. As these consequences emerged, many states began to revoke the laws mandating mass screening, and the sickle-cell program was abandoned as lacking in merit.

The distortion of emphasis on genetic as opposed to environmental sources of ill health and social problems is most clearly seen in the screening programs to detect male infants with an extra Y chromosome (XYY *males*). Adults with an extra Y chromosome are perfectly normal according to all clinical and psychological criteria. [12] The only way they can be detected is by chromosome screening. Despite the absence of any evidence for health or behavioral problems, XYY males have been labeled hyperaggressive and depicted as genetically doomed to lives of criminality. This myth arose when a 1965 study reported that the frequency of XYY males in the mental-penal ward of a Scottish hospital was higher than could be expected by chance. The myth was reinforced in this country by the publicity surrounding the claim that mass-murderer Richard Speck was an XYY male. (The later retraction—he was in fact an XY male—received little notice.) The result, however, was an outpouring of funds to study the "criminal chromosome." Among the agencies which supported such research were the Law Enforcement Assistance Administration of the U.S. Justice Department and the Center for the Study of Crime and Delinquency of the National Institute of Mental Health. During the late 1960s, with its increasing social unrest and demands for political and economic change, the suggestion that social problems might be ascribed to genes must have seemed particularly attractive to these agencies.

In certain of the programs funded, newborn children were screened for the extra Y chromosome, then their development was followed to see if any behavioral abnormalities arose. [13] In many cases, parents were told of the extra chromosome and of the possibility that behavioral problems might arise. It seems likely that this kind of program, with its profound interference in the life of the family, constitutes a far greater danger to the development of the infant than anything its chromosomes might do. Why, after 10 years of study indicating no significant differences (other than height) between XY and XYY males are such programs still being funded by our government? We maintain that one result of this type of activity is that it distracts attention from the major causes of societal problems: unemployment, racism, poverty, lack of opportunity, social disruption, and so on.

Smoke Screens

We see increasing indication that genetic screening programs are being used to shift the focus of blame to the individual. Another example is the recent suggestion that most cancers may be explained genetically—that it is not the pollutants which are at fault, but the susceptibility of certain persons to pollutants. [14] The effect of such propaganda, of course, is to take industries off the hook for cleaning up our atmosphere and improving working conditions.

We are living at a time in which health care is felt to be a right of all. But the increasing expense of wasteful and misapplied therapeutic methods is pushing the costs of such care beyond reach, and the net effect is to restrict the possibility of good basic health care for all Americans. Again, as more and more evidence accumulates supporting the environmental causes of ill health, we are presented with a magic bullet—genetic screening and engineering—to cure our ills.

References

1. Reilly, P. "Genetic Screening Legislation." In *Advances in Human Genetics* 5:319; 1975. H. Harris and K. Hirschhorn, editors. Plenum Press, New York, N.Y.
2. See, for example, J. Cairns "The Cancer Problem." *Scientific American* 233:64; November 1975.
3. "What Are the Facts About Genetic Disease?" U.S. Department of Health, Education and Welfare. DHEW Pub. No. (NIH) 75-370. 1975.
4. *Genetic Screening: Programs, Principles and Practices*. National Academy of Sciences, Washington, D.C. 1975.
5. Levy, H. "Genetic Screening." In *Advances in Human Genetics* 4:1; 1975. H. Harris and K. Hirschhorn, editors.
6. Kaback, M. M. *et al. Progress in Medical Genetics* X:103; 1974. A. G. Steinberg and A. C. Bearn, editors. Grune and Stratton, New York, N.Y.
7. McQueen, D. V. "Social Aspects of Genetic Screening for Tay-Sachs Disease." *Social Biology* 22:125; 1975.
8. Kuhr, M.D., "Doubtful Benefits of Tay-Sachs Screening." *New England Journal of Medicine* 292:371; 1975.
9. Powledge, T. "Genetic Screening as a Political and Social Development." In *Ethical, Social and Legal Dimensions of Screening for Human Genetic Disease*. D. Bergsma, editor. Birth Defects Original Article Series. X(6):25; 1974. The National Foundation.
10. Reilly, P. "Sickle Cell Anemia Legislation." *Journal of Legal Medicine*. September/October 1975, p. 39.
11. Horn, J. "When Genetic Counseling Backfires." *Psychology Today* 9:20; September 1975.
12. Borgaonkar, D. and S. Shah. "The XYY Chromosome Male—Or Syndrome?" *Progress in Medical Genetics* 10:135; 1974.
13. Beckwith, J. and J. King. "The XYY Syndrome—A Dangerous Myth." *New Scientist* 64:474; November 14, 1974.
14. Brody, J. "Cancer Control, A Fight on 100 Diseases." *The New York Times*, December 9, 1975. p. 1.